

(For Furnaces)

# ENERGYGUIDE



You can save substantially on home heating and cooling energy costs by following the simple steps outlined below:

1. Weatherproof your house
2. Assure energy efficient heating and cooling equipment selection and installation
3. Operate and maintain your system to conserve energy.

Help conserve energy. Compare the energy efficiency rating and cost information for this model with others. Check the figures and spend less on energy.

**Your contractor has the energy fact sheets. Ask for them.**

**Important** Removal of this label before consumer purchase is a violation of federal law (42 U.S.C. 6302)

SAMPLE LABEL

[FR Doc. 79-35566 Filed 11-16-79; 8:45 am]

BILLING CODE 6750-01-C

# Federal Register

---

Monday  
November 19, 1979

---

## Part V

### Department of Transportation

---

#### Coast Guard

---

Tank Vessels of 10,000 Gross Tons or  
More and Tank Vessels of 20,000 DWT  
or More Carrying Oil in Bulk

---

Design, Equipment, Operating, and  
Personnel Standards, Improved Steering  
Gear Standards and Inert Gas and Deck  
Foam Systems



## DEPARTMENT OF TRANSPORTATION

## Coast Guard

## 46 CFR Parts 30, 32 and 34

[CGD 77-057a]

## Inert Gas and Deck Foam Systems

AGENCY: Coast Guard, DOT.

ACTION: Final rule.

**SUMMARY:** This amendment to the tank vessel regulations requires all new foreign and domestic crude oil tankships and product tankships which enter U.S. ports, which are of 20,000 deadweight tons (DWT) and above to be fitted with an inert gas system. New foreign flag tankships of 20,000 DWT and greater are required to be fitted with a fixed deck foam system. Additionally, all existing tankships greater than 20,000 DWT for crude carriers and 40,000 DWT for product carriers will have to be fitted with inert gas systems. Dates for implementation are specified in the rule. This action implements one of the minimum standards of the Port and Tanker Safety Act of 1978, and should result in safer oil tanker operations.

**EFFECTIVE DATE:** This amendment is effective on January 1, 1980.

**ADDRESSES:** Copies of the Final Regulatory Analysis and Environmental Impact Statement relating to this amendment are available for examination at the Marine Safety Council (G-CMC/TP24), Room 2148, Coast Guard Headquarters Building, 2100 Second Street SW., Washington, D.C. 20593.

**FOR FURTHER INFORMATION CONTACT:** Mr. Daniel F. Sheehan, Merchant Marine Technical Division (G-MMT-4/TP13), Room 1300, Coast Guard Headquarters Building, 2100 Second Street, SW., Washington, D.C. 20593 (202-426-2167).

**SUPPLEMENTARY INFORMATION:** On February 12, 1979 the Coast Guard published a proposal in the *Federal Register* (44 FR 9039) to require inert gas systems (IGS) or deck foam systems on certain tankships. Interested persons were given an opportunity to submit written comments to the Coast Guard concerning the proposal until April 16, 1979. Two public hearings were held, one in Washington, D.C. on March 21, 1979, and the other in San Francisco, California on March 28, 1979. A total of 15 comments were received on the proposed regulations either in writing or orally at the public hearings. A discussion of comments received is contained in the following paragraphs.

**DRAFTING INFORMATION:** The principal persons involved in drafting these rules are: Daniel F. Sheehan, Project Manager, Office of Merchant Marine Safety; and Michael N. Mervin, Project Attorney, Office of Chief Counsel.

## Discussion of Comments

The proposed regulations were promulgated to implement the tank vessel equipment and construction standards which were developed at the Tanker Safety and Pollution Prevention (TSPP) Conference held under the auspices of the Inter-Governmental Maritime Consultative Organization (IMCO) in London during February 1978. The authority for issuing these regulations is the Port and Tanker Safety Act of 1978 (PTSA). Two comments pointed out that the proposed applicability of Part 32 to foreign tankships was not consistent with the applicability requirements of the PTSA. The proposal did not exclude any foreign tank vessel not destined for, or departing from, a port or place subject to the jurisdiction of the United States, that is in innocent passage through the territorial seas of the United States or in transit through the navigable waters of the United States which form a part of an international strait. The exception for foreign vessels has been incorporated in the Final Rules at § 32.53-1(c)(2).

One comment suggested that the rule making be expanded to require IGS on all oceangoing tank vessels of more than 1600 gross tons. In a similar vein, the same comment suggested that data for tank vessels of less than 20,000 DWT between the years of 1974 and 1978 be evaluated to determine incidence of fire and explosion. The purpose of the evaluation would be to determine whether or not there was justification for requiring IGS or deck foam systems or both on vessels of less than 20,000 DWT.

An examination of the extension of applicability to include a wider range of tank vessels is currently in progress. Statistics for the United States flag fleet will be submitted to the IMCO Subcommittee on Fire Protection for use in their continuing review of fire protection measures for tank vessels. IMCO is currently developing a data base for tank vessel casualties on a worldwide basis. This data base will be used in determining the need for extension of applicability.

Another comment suggested that the rule making be extended to all barges carrying similar cargoes. This is not germane to this rule making; however, an examination was conducted with

respect to the need for IGS on tank vessels other than those affected by this rule making.

Fire and explosion incidents on barges have been reviewed for the period of 1972 through 1977. During that period there were 59 incidents. Of this 59, fifteen occurred in, or adjacent to, the cargo tanks. Eleven of those incidents involved explosions which occurred due to ignition during repair. Hot work was conducted on cargo tanks which had not been gas freed. The other four incidents involved improper use of equipment or procedures. A review of the 1978 data will be made when it is available. However, at this time, fitting of inert gas systems on the tank barge fleet of over 3,000 barges is not warranted.

One comment suggested that the Coast Guard establish adequate standards for the design, fabrication, installation, operation, maintenance, repair, testing, and inspection of inert gas systems on vessels trading in United States ports. The reason cited for this recommendation was the study conducted by the Norwegian Classification Society det Norske Veritas (DNV) which has found that a majority of installations examined by that society had experienced major maintenance problems. This study was previously described in the notice of proposed rule making.

The Coast Guard feels that substantial progress has been achieved with respect to the concerns addressed by the comment. The DNV study was conducted after there had been a large program of fitting IGS on VLCC's. The study served to highlight problems with respect to materials use as well as maintenance requirements.

In the intervening period, two major industry organizations, the International Chamber of Shipping (ICS) and the Oil Companies International Marine Forum (OCIMF) have collaborated on the recently published "Inert Flue Gas Safety Guide". This guide is receiving wide distribution and is being considered by the IMCO Subcommittee on Fire Protection as a supplement to the requirements for inert gas systems contained in SOLAS 74 and its 1978 Protocol. This guide addresses the concerns of the comment; however, it is not mandatory. The Coast Guard has developed an inspection guide for inert gas systems to be used by Marine Inspectors. This guide will be included as a chapter in the Marine Safety Manual. All of these efforts are directly aimed at improving the design, maintainability, and reliability of IGS. The combination of experience with the systems and increased attention to



training, operation, and maintenance of the systems on the part of shipowners is having the desired positive result.

Several comments were concerned with the exemption process contained in § 32.53-3. One wanted to require that each exemption be accomplished through the regulatory process so that adequate public comment could be achieved. This is not a practical suggestion. The regulatory process prescribes a means for an individual to request relief from certain requirements. Section 32.53-3 details the procedures that must be followed and permits an avenue for competent technical judgments to be made based on the merits and arguments for each case. Under 5 U.S.C. 551 an exemption is a "license", not a "rule", and cannot be legally subjected to the rulemaking process and on this basis the comment's suggestion was not adopted; however, in appropriate cases the Coast Guard will provide public notice of applications for exemption under consideration.

Other comments stated that § 32.53-3 did not address the exemptions based on cargo incompatibility which are specified in Section 7, part C of the Port and Tanker Safety Act. The PTSA 1978 permits the Secretary to authorize an alternative protection system if a product carrier, required by this section to be fitted with an inert gas system, carries dedicated products which are incompatible with such a cargo tank protection system. Application for this exemption would have to be made in accordance with § 32.53-3. Regulation 60 of Chapter II-2 of SOLAS 74 contains the basic principles by which an equivalent cargo tank protection system would be evaluated. Use of this regulation (reg. 60, Chapter II-2), the general equivalency clause found in the base regulation (46 CFR Subchapter D), and the exemption process outlined in § 32.53-3 will permit shipowners or operators to address their proposals to the Coast Guard concerning problems created by possible cargo and system incompatibility.

Four comments stated that paragraph § 32.53-1(b)(2) was not justified with respect to changing existing regulations which exempted Grade E cargoes carried at a temperature lower than 5°C below their flash points to a figure of 50° below their flash points. The Coast Guard agrees with these comments. The figure of 50°C was a typographical error and the regulation has been corrected.

One comment requested that the Coast Guard clarify what vessels are product carriers and what commodities are considered to be products. The terms "product" and "product carrier" are explained in the discussion of

Division I comments in the preamble of the regulations for tank vessels of 20,000 DWT or more carrying oil in bulk (Docket No. CGD 77-058b) published elsewhere in this Part of this Federal Register. Since the terms "product" and "product carrier" are defined in the Act (PTSA), it is not necessary to redefine them in these regulations.

One rule making petition was received which proposed that the inert gas system be required aboard tankships or combination carriers of 20,000 DWT or more. This would apply to U.S.-flag tankships carrying Grades A, B, C, and D liquids and those foreign-flag tankships calling at U.S. ports carrying flammable or combustible liquids. This proposal, or an equivalent means of reducing the potential for cargo tank explosion, would also apply to all U.S. barges certificated for Grades A, B, C, and D liquids in coastal trade. The proposal would be effective after December 31, 1981.

This proposal is similar to the proposed rule except for application to small tankships and barges, and the effective date. With regard to the smaller existing tankships, the risk of explosion is less than the larger ships which have high-capacity washing machines. Where the risk is increased by fitting of either high capacity tank washing machines or crude oil washing, ICS is required. With regard to tank barges, comments presented earlier apply. Justification for fitting inert gas systems on barges was discussed previously. The dates for implementation published in the Coast Guard proposal allowed smaller vessels until June 1983 to be fitted with this equipment in order to relieve shipyard congestion, taking into account that the population of smaller vessels is greater than larger vessels. For these reasons, the Coast Guard has not adopted the proposal.

One comment requested clarification of requirements for existing ships affected by the rulemaking that had existing inert gas systems. Foreign-flag vessels in this category would be required, where necessary, to upgrade their systems to comply with the minimum provisions of regulation 60 of Chapter II-2, SOLAS 74. U.S.-flag vessels would be required to bring their installations up to the standards contained in Subpart 32.53. Where design differences exist on an existing system and the owners or operators can demonstrate that an equivalent level of safety can be obtained, alternative arrangements may be accepted in accordance with provisions previously discussed.

In accordance with the foregoing, the amendments to Chapter I of Title 46, Code of Federal Regulations published on February 12, 1979 (44 FR 9039) are adopted, with modifications, as set forth below.

Dated: November 13, 1979.

R. H. Scarborough,  
Vice Admiral, U.S. Coast Guard Acting  
Commandant.

## PART 30—GENERAL PROVISIONS

1. By adding a new § 30.01-5(e)(2) as follows:

### § 30.01-5 Application of regulations—TB/All.

\* \* \* \* \*

(e) \* \* \*  
(2) A foreign flag vessel, except a public vessel, which operates on or enters the navigable waters of the United States, or which transfers oil in any port or place subject to the jurisdiction of the United States, must comply with the provisions of Subparts 32.53 and 34.05 of this chapter, as applicable.

\* \* \* \* \*

## PART 32—SPECIAL EQUIPMENT, MACHINERY, AND HULL REQUIREMENTS

2. By revising § 32.53-1 to read as follows:

### § 32.53-1 Application—T/All.

(a) Except as provided in paragraphs (b) and (c) of this section, this subpart applies to:

(1) A U.S. crude oil tanker or product carrier of 100,000 DWT tons (metric) or more or combination carrier of 50,000 DWT tons (metric) or more, that has a keel laying date on or after January 1, 1975.

(2) A new (as defined in 46 U.S.C. 391a(2)) crude oil tanker or product carrier, or foreign flag crude oil tanker or product carrier of 20,000 DWT tons or more entering the navigable waters of the U.S.

(3) A crude oil tanker that is equipped with a cargo tank cleaning system that uses crude oil washing.

(4) An existing product carrier of 20,000 deadweight tons (metric) or more that has tank washing machines with a capacity of more than 60 cubic meters per hour after May 31, 1983.

(5) Any other U.S. or foreign flag—  
(i) Crude oil tanker or product carrier of 70,000 deadweight tons (metric) and over after May 31, 1981;

(ii) Crude oil tanker between 20,000 and 70,000 deadweight tons (metric) after May 31, 1983;



(iii) Product carrier between 40,000 and 70,000 deadweight tons (metric) after May 31, 1983.

(b) This subpart does not apply to vessels designed to carry only—

- (1) Liquefied gas cargo; or
- (2) Grade E cargo that is carried at a temperature lower than 5° C below its flash point.

(c) This part does not apply to the following:

(1) Vessels under subsections (4) and (5) of Sec. 5, Port and Tanker Safety Act of 1978 (Pub. L. 95-474, 92 Stat. 1480, 46 U.S.C. 391a).

(2) Any foreign vessel not destined for, or departing from, a port or place subject to the jurisdiction of the United States, that is in innocent passage through the territorial seas of the United States or is in transit through the navigable waters of the United States which form a part of an international strait.

(3) Adding a new § 32.53-3 as follows:

**§ 32.53-3 Exemptions.**

(a) The Chief, Office of Merchant Marine Safety grants exemptions for crude oil tankers of less than 40,000 deadweight tons not fitted with high capacity tank washing machines, if the vessel's owner can show that compliance would be unreasonable and impracticable due to the vessel's design characteristics.

(b) Requests for exemptions must be submitted in writing to:

Commandant (G-MMT/82), U.S. Coast Guard, Washington, D.C. 20590.

(c) Each request must be supported by documentation showing that—

- (1) The system would be detrimental to the safe operation of the vessel;
- (2) It is physically impracticable to install the system; or
- (3) Adequate maintenance of the system would be impossible.

(d) The vessel's owner may request a conference. The exemption request file will be available for use in the conference and additional arguments or evidence in any form may be presented. The conference will be recorded. The presiding officer summarizes the material presented at the conference and submits written recommendations to the Chief, Office of Merchant Marine Safety.

(e) The Chief, Office of Merchant Marine Safety reviews the exemption request file and decides whether to grant or deny the exemption. The decision shall include an explanation of the basis on which the exemption is granted or denied, and constitutes final agency action.

**PART 34—FIREFIGHTING EQUIPMENT**

4. By adding a new sentence to § 34.05-5(a)(2) as follows:

**§ 34.05-5 Fire-extinguishing systems—T/All.**

- (a) \* \* \*
- (2) \* \* \* New foreign flag tankers of 20,000 DWT and over as defined in subsection (2) of 46 U.S.C. 391a must be fitted with a fixed deck foam system complying with Regulation 61, Chapter II-2 of SOLAS 1974.

5. By adding a new § 34.20-1(c) as follows:

**§ 34.20-1 Application—T/All.**

(c) Foreign flag crude oil tankers and product carriers required to have fixed deck foam systems by this subpart must have systems that are designed and installed in accordance with Regulation 61 of Chapter II-2 of SOLAS 1974. (Senate Document, 57-1180, GPO, Washington, 1976; "Message from the President of the United States transmitting, the International Convention for the Safety of Life at Sea, 1974, Done at LONDON, November 1, 1974").

(46 U.S.C. 391a; 49 CFR 1.46(n)(4))

[FR Doc. 79-35623 Filed 11-16-79; 8:45 am]

BILLING CODE 4910-14-M

**33 CFR Part 157**

**[CGD 77-058b]**

**Tank Vessels of 20,000 DWT or More Carrying Oil in Bulk; Design, Equipment, Operating, and Personnel Standards**

**AGENCY:** Coast Guard, DOT.

**ACTION:** Interim Final Rule.

**SUMMARY:** This amendment adds to the rules for certain foreign and domestic tank vessels carrying oil in bulk, standards for segregated ballast tanks, dedicated clean ballast tanks, and crude oil washing systems. The standards are essentially the same as the standards and recommendations contained in the *Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973* which are reflected in the Port and Tanker Safety Act of 1978. These standards will reduce the probability of oil spilling into the navigable waters of the United States and the world's oceans from tank vessel accidents, will reduce the amount of operational discharges of oil to the oceans from

deballasting and tank cleaning, and will contribute to the conservation of oil. Since this rule changes the proposed assignment of responsibility for various operating requirements, additional comments from the public are invited.

**EFFECTIVE DATE:** This amendment is effective on January 1, 1980.

**COMMENT DATE:** Written comments must be received on or before February 1, 1980.

**ADDRESSES:** Written comments from the public on the assignment of responsibility should be submitted to the Commandant (G-CMC-TP/24), Room 2418, U.S. Coast Guard, Trans Point Building, 2100 2nd Street, SW., Washington, D.C. 20593. All comments will be available for examination at this address. Copies of the Final Regulatory Analysis and Environmental Impact Statement relating to this amendment may be obtained from or examined at this address.

**FOR FURTHER INFORMATION CONTACT:** Mr. Joseph J. Angelo, Merchant Marine Technical Division (G-MMT-1/TP-13), Room 1308, U.S. Coast Guard, Trans Point Building, 2100 2nd Street SW., Washington, D.C. 20593, (202-426-4431).

**SUPPLEMENTARY INFORMATION:** On February 12, 1979, the Coast Guard published a proposal in the Federal Register (44 FR 8984) to add regulations governing tank vessels of 20,000 DWT or more carrying oil in bulk and to withdraw a previous proposal (42 FR 24868) for double bottoms and segregated ballast tanks for tank vessels of 20,000 DWT or more. The proposal of February 12 would adopt standards for segregated ballast tanks (SBT), dedicated clean ballast tanks (CBT) and crude oil washing (COW) systems which were consistent with the recommendations of the *Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973* (MARPOL Protocol) developed at the tanker Safety and Pollution Prevention (TSPP) Conference held under the auspices of the Intergovernmental Maritime Consultative Organization (IMCO) in London during February, 1978. The proposal would also implement most of the requirements of Subsection 7 of Section 5 of the Port and Tanker Safety Act of 1978 (Pub. L. 95-474, 92 Stat 1471).

The amendments to Part 157 of Title 33, Code of Federal Regulations were published in three divisions designated as Division I, Division II, and Division III. Division I contained amendments to various sections in Part 157 that required modification because of the standards contained in the MARPOL Protocol and to the applicability in Part



157 so it conforms with Section 5 of the Port and Tanker Safety Act of 1978. Division II contained standards for Dedicated Clean Ballast Tanks which were derived from Resolution 14 to the MARPOL Protocol (Specifications for Oil Tankers with Dedicated Clean Ballast Tanks). Division III Contained standards for Crude Oil Washing Systems which were derived from Resolution 15 to the MARPOL Protocol (Specifications for the Design, Operation and Control of Crude Oil Washing Systems).

Interested persons were given an opportunity to submit written comments to the Coast Guard concerning the proposal until April 16, 1979. Two public hearings were held, one in Washington, D.C. on March 21, 1979, and the second in San Francisco, California on March 28, 1979. A total of sixty-five commenters responded to the proposed regulations either in writing or orally at the public hearings. The significant comments received are discussed in this document after Drafting Information.

In reviewing the proposed regulations, the Coast Guard has reconsidered the assignment of responsibility for compliance with the various requirements between the owner and operator of the tank vessel, the master, and other designated persons. In addition, two commenters were of the opinion that operation of the COW and CBT systems should be the responsibility of the officer in charge of these operations and not the responsibility of the Master of the vessel, as proposed in the regulations. As mandated by the PTSA, any person who violates any regulation issued under the authority of the PTSA is subject to a civil penalty not to exceed \$25,000 and any person who willfully and knowingly violates any regulation issued under the authority of the PTSA is subject to a criminal penalty of up to \$50,000 or imprisonment for not more than five years, or both. The Master of the vessel is normally the appropriate person to be held responsible for ensuring that the vessel is operated in accordance with the applicable regulations. In some instances this responsibility must be shared with the owner and operator. In other instances human error or inattentiveness by the crew may cause violations, despite the best efforts of the most conscientious and capable Master, making assessment of penalties against the Master inappropriate. Accordingly, changes have been made to the proposed regulations in an effort to enable the Coast Guard to assess penalties, in appropriate cases, against the person or

persons who could have prevented the violation.

In some instances the regulations were changed to clearly indicate that the responsibility of the Master is shared by the owner and operator of the vessel. This is felt to be appropriate for the provisions relating to documents required on board a vessel, recording information in the manuals, personnel qualifications, crude oil washing of tanks, restrictions on cargo carried, and alterations to tank vessels. These changes are reflected in § 157.116, § 157.118, § 157.150, § 157.152, § 157.154, § 157.160, § 157.172, § 157.214, § 157.216, and § 157.218.

Ensuring compliance with an operating requirement is, in most cases, appropriately the responsibility of the Master. These areas include meeting manual procedures, crude oil washing during a voyage, use of the inert gas system, control of hydrocarbon vapor emissions, personnel assignments, removal of equipment, and following operating procedures. Accordingly, § 157.35, § 157.155, § 157.156, § 157.158, § 157.162, § 157.164, § 157.166, § 157.168, § 157.170, § 157.225, § 157.226, and § 157.228 have not been changed in this regard.

For those instances where it is not appropriate to hold the Master responsible for a violation of these regulations, § 157.26 has been added to require that no person may cause or authorize the operation of a tank vessel in violation of these regulations. An example of this situation would be when the main deck watch required under § 157.168 is abandoned by the person assigned that watch by the Master. Such action would cause the operation of the tank vessel in violation of § 157.168. Another example would be when the owner or operator of a tank vessel directs compliance with operating procedures that deviate from those contained in this document for the purpose of reducing time at the discharge terminal. Such action would authorize the operation of a tank vessel in violation of certain operating requirements of this document.

The Coast Guard has determined that it would be impractical and contrary to the public interest to delay the publication of these comprehensive regulations for the purpose of allowing an opportunity for comment on the changes to the assignment of responsibility in the sections listed above. Prompt publication of the design and equipment requirements is necessary to provide owners and operators sufficient time to comply with these regulations. In addition, the alternative of publishing the design and

equipment requirements as final rules and the operating requirements as a supplemental notice of proposed rulemaking was also determined to be impractical. Therefore, these regulations have been published as final rules. They have been designated "Interim Final Rules" to indicate that further consideration will be given to the assignment of responsibility in the sections listed above. The Coast Guard is not soliciting comments on the remaining provisions of these regulations, including the substantive requirements of the sections listed above, as part of this rulemaking action. If the Coast Guard considers changes to these provisions to be desirable at a later date, they will be the subject of a separate rulemaking proposal.

Interested persons are invited to comment on the changes made to the assignment of responsibility in the sections listed above by submitting written data, views, or arguments. Persons submitting comments should include their names and addresses, identify this notice (CGD 77-058b) and the specific section to which their comments apply, and give reasons for the comments. Persons desiring acknowledgment that their comment has been received should enclose a stamped self-addressed postcard or envelope. All comments received before expiration of the comment period will be evaluated by the Coast Guard and changes may be made to the regulations regarding the assignment of responsibilities where appropriate. No additional public hearing is planned.

#### Drafting Information

The principal persons involved in drafting this rule are: Commander George F. Ireland and Mr. Joseph J. Angelo, Project Managers, Office of Merchant Marine Safety, and Mr. Stanley Colby, Project Attorney, Office of Chief Counsel.

#### Discussion of Comments

##### General Comments

The proposed regulations were promulgated to implement the tank vessel equipment and construction standards developed at the TSPP Conference of February 1978 which are mandated by Subsection 7 of Section 5 of the Port and Tanker Safety Act of 1978 (PTSA).

Several commenters expressed disappointment and concern that the proposal did not address the exemption allowed in the PTSA when shore-based reception facilities are available or the additional requirements for tank vessels between 20,000 and 40,000 DWT at 15



years of age that are mandated by the PTSA. The PTSA allows, with certain constraints, the use of adequate shore-based reception facilities for handling dirty ballast instead of the SBT, CBT, or COW requirements on tank vessels if those facilities are determined to be the preferred method of handling that ballast and are readily available. Proposed regulations addressing this exemption, the eligibility for exemptions, the adequacy of shore-based reception facilities, and the preference of the method of handling dirty ballast are currently being developed by the Coast Guard and will be published in the Federal Register in the near future. The PTSA also imposes certain equipment and construction requirements on crude oil tankers and product carriers between 20,000 DWT and 40,000 DWT, by not later than January 1, 1986 or the date on which the vessel reaches 15 years of age, whichever is later. Regulations implementing this provision of the PTSA are being developed by the Coast Guard and will be published in a future issue of the Federal Register.

One commenter said the proposed regulations did not address the problem of air pollution from the operation of ship's boilers and recommended that the Coast Guard "review fuel supplies and limit the sulfur content of boiler fuel". Air pollution from ships boilers is outside the scope of these regulations.

One commenter noted that the proposal made no reference to proper oil spill contingency preparations and procedures. Regulations addressing this issue are published in 33 CFR Part 153.

Two commenters requested clarification of the statement in the preamble of the proposal which said the standards adopted by the TSPP Conference are at least equivalent to the "Presidential Initiatives". The "Presidential Initiatives" (the President's message to Congress on March 17, 1977) recommended SBT on all existing tank vessels of 20,000 DWT or more and double bottoms on all new tank vessels of 20,000 DWT or more. The TSPP standards included SBT or a COW system on existing crude oil carriers of 40,000 DWT or more, SBT or CBT on existing product carriers of 40,000 DWT or more, protectively located SBT and a COW system on new crude oil carriers of 20,000 DWT or more, and protectively located SBT on new product carriers of 30,000 DWT or more. Although the minimum DWT limits of these regulations are, in some instances, higher than those recommended in the "Presidential Initiatives", Coast Guard estimates show that the addition of the

COW and CBT alternatives at the higher DWT limits of these regulations results in approximately the same reduction of operational oil pollution as would the SBT requirement for tank vessels of the sizes recommended by the "Presidential Initiatives". Section 5 of the Final Regulatory Analysis and Environmental Impact Statement addresses this comparison in detail. The issue of the effectiveness of protectively located segregated ballast tanks vs. the effectiveness of double bottoms is extremely subjective due to the uncertainties in oil pollution statistics regarding tank vessel accidents. These uncertainties make it impossible to produce a reliable quantitative comparison of these two construction features at this time. Aware of this situation, IMCO recommended a study of the issue in Resolution 17 of the TSPP Conference. The Coast Guard is planning to work through IMCO on a data collection service to aid in removing some of the uncertainties in oil pollution statistics regarding tank vessel accidents.

One commenter asked if "coastwise vessels" would be allowed to discharge dirty ballast to ballast retention facilities. As discussed above, shoreside reception facilities for ballast will be the subject of a future proposal.

A number of commenters suggested that the Coast Guard take into consideration the developments regarding the proposed regulations reached at the Eleventh Session of the IMCO sponsored Marine Environmental Protection Committee (MEPC XI) in June 1979. The Coast Guard delayed publication of these rules to incorporate into them any recommendations of MEPC XI that are within the scope of the notice of proposed rules of February 12, 1979. Any further developments reached at IMCO on issues relating to the regulations in this document are expected to be incorporated through new proposals.

One commenter suggested that the Coast Guard wait until all maritime nations comply with the TSPP requirements before implementing the requirements of the PTSA which go beyond the TSPP standards. The Coast Guard cannot make this choice since the PTSA mandates implementation, regardless of when the TSPP requirements are adopted and complied with by other maritime nations.

One commenter stated that the Economic Impact was inadequately addressed in the preamble of the proposed rules. The Economic Impact included in the preamble of the proposed rules reflected the significant highlights of the economic assessment

conducted by the Coast Guard. A much more detailed economic analysis can be found in the Final Regulatory Analysis and Environmental Impact Statement. The preamble is not the proper place for such detailed information and would be too lengthy if such information were included in it. The Final Regulatory Analysis and Environmental Impact Statement is available as indicated under Addresses.

One commenter is of the opinion that these regulations are only useful for operational pollution and are not useful in preventing casualty type pollution. Protectively located segregated ballast tanks and dedicated clean ballast tanks provide protection against collisions, ramming and groundings. The requirements for SBT to be protectively located on certain new tank vessels and CBT to be wing tanks, unless approved by the Commandant to be center tanks, are specifically aimed at reducing oil pollution from tank vessel accidents. In addition, a note now follows § 157.10a that encourages the location of SBT in wing tanks on existing tank vessels.

Three commenters noted that a statement in the "Presidential Initiatives" ("Where technological improvements and alternatives can be shown to achieve the same degree of protection against pollution, the rules will allow their use."), was not included in the proposal and recommended such a principle be incorporated into the regulations. 33 CFR 157.07 allows the Commandant to approve the use of a design or equipment substitute for a requirement in Part 157, which would include technological improvements or alternatives. This allowance for substitutes that are equivalent is consistent with the policy developed by IMCO and provides the necessary mechanism for the public to submit those equivalents to the Coast Guard for review.

Four commenters recommended that the Coast Guard require stricter standards than are provided in the MARPOL Protocol and the *Protocol of 1978 Relating to the International Convention for the Safety of Life at Sea, 1974* (SOLAS Protocol) (collectively, both Protocols are referred to as the 1978 Protocols) for U.S. tank vessels in domestic trade. A study was conducted during May and June of 1978 by the Coast Guard and other Federal Agencies to determine if tanker safety and pollution prevention measures in addition to those contained in the 1978 Protocols should be applied to U.S. tank vessels in domestic trade. Coast Guard report, No. CG-M-5-78, Report of Study of Tanker Safety and Pollution



Prevention Requirements for U.S. Tankers in Domestic Trade, June 1978, was issued and is available to the public as document AD A057607 from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161. One conclusion reached by the study was that except for U.S. tankers transporting oil from the Outer Continental Shelf (OCS) (to be considered in a future proposal), requirements beyond those of the 1978 Protocols for U.S. tankers in domestic trade would not be cost effective at this time due to the uncertainties that exist in the area of tank vessel oil pollution. The study recommended that a number of actions be taken to remove these uncertainties. Work on these actions has begun. This decision, however, does not foreclose invoking additional requirements at some future time.

Four commenters recommended that the Coast Guard require stricter standards than are provided in the 1978 Protocols for foreign flag tank vessels transferring cargo at U.S. ports. The standards recommended by the commenters are essentially the same as the standards recommended in the "Presidential Initiatives". The Coast Guard did not publish rules that exceed the 1978 Protocols for foreign flag tank vessels transferring cargo at U.S. ports for two reasons. First, oil pollution is a global problem requiring an international solution. Major unilateral action on the part of the United States, while possibly benefiting our waters, might cause a reduction in the quality of the world's oceans. Such unilateral action would result in a tank vessel fleet dedicated in the trade to the United States. Thus, while tanker safety and pollution prevention measures would be improved for those tank vessels, it would not be expected to improve for other tank vessels. For further discussion of this issue and other indirect impacts of unilateral action, see Chapter Six of the Final Regulatory Analysis and Environmental Impact Statement. Second, it is important to balance cost and benefits, especially when inflation is a major problem of the United States at this time. The regulations in this document should reduce oil pollution by about the same amount as the measures recommended by the commenters, at about one-third the cost. Such results must be weighed heavily in view of today's economic situation.

One commenter recommended that all new U.S. tank vessels be built with double hulls, all existing U.S. tank vessels be retrofitted with segregated

ballast tanks, and all U.S. tank vessels be fitted with a COW system. Such requirements go beyond those recommended by the MARPOL Protocol and those required by the PTSA and for reasons discussed above are not being implemented at this time.

One commenter recommended that all U.S. tank vessels in "coastwise" trade be exempt from these regulations. The PTSA mandates the requirements in this document for all U.S. tank vessels above certain DWT sizes, regardless of trade. The requirements of this document are applicable to all seagoing U.S. tank vessels above certain DWT sizes. There are currently no U.S. tank vessels above the DWT sizes of these regulations that trade exclusively on rivers, lakes, bays, sounds, or the Great Lakes, nor does the Coast Guard expect such vessels to be built in the future. In view of this mandate, the commenter's suggestion is rejected.

One commenter suggested that a COW system should not be permitted as a substitute for SBT. As mandated by the PTSA, a COW system is allowed as an alternative to SBT on crude oil carriers. In addition, the Coast Guard has estimated that a COW system would reduce operational oil pollution from tank vessels affected by the regulations in this document by about 38% compared to a 28% reduction in operational oil pollution from the same tank vessels having SBT but not a COW system. Section 5 of the Final Regulatory Analysis and Environmental Impact Statement addresses this comparison in detail.

One commenter recommended that the use of load-on-top procedures should not be allowed as a substitute for SBT or a COW system. Neither the proposed regulations nor the regulations in this document allow the use of load-on-top procedures as a substitute for SBT or a COW system.

Three commenters recommended that the Coast Guard require stringent and comprehensive personnel qualification and manning standards. Personnel and manning requirements are being developed by the Coast Guard and will be the subject of a future proposal.

Six commenters recommended that the Coast Guard require back-up radar and collision avoidance assistance equipment. Final regulations for a second radar were addressed in the *Federal Register* of July 24, 1978 (43 FR 32112) and on May 7, 1979 (44 FR 26740). In the July 24 issue of the *Federal Register*, The Coast Guard also withdrew the proposed requirement for collision avoidance aids. The need for unilateral action will be re-evaluated when IMCO has completed the

recommended task of developing performance standards and carriage requirements for collision avoidance aids. Coast Guard representatives are participating in the development of these standards.

Two commenters recommended that the Coast Guard require standards for shipboard electronic aids and their use and maintenance. Interim final regulations for electronic navigation equipment were published by the Coast Guard in the May 31, 1979 issue of the *Federal Register* (44 FR 31592).

Four commenters recommended that the Coast Guard implement regulations for vessel maneuverability and minimum levels of tug assistance. Such requirements are outside the scope of these regulations, however, the Coast Guard has conducted a study on tank vessel maneuverability entitled, "Presidential Initiative for an Evaluation of Devices and Techniques to Improve Maneuvering and Stopping Ability of Large Tank Vessels, September, 1979", to determine if such requirements are necessary. A copy of this report can be obtained by contacting Commander James Card, G-MMT-4, U.S. Coast Guard, Washington, D.C. 20593, (202) 426-2197.

One commenter recommended that the Coast Guard implement requirements for foreign flag tank vessel inspection and certification to determine compliance with all the provisions of Coast Guard regulations. Such requirements are outside the scope of these regulations, however, the Coast Guard is in the process of developing and implementing such requirements as mandated by the PTSA.

One commenter submitted a Formal Tanker Standards Rulemaking Petition which recommends the following: (1) SBT standards which go beyond those required by the MARPOL Protocol on all tank vessels.

- (2) Double bottom requirements.
- (3) Collision avoidance and dual radar requirements.
- (4) Navigational equipment requirements.
- (5) Inert gas system requirements.
- (6) Vessel maneuverability requirements.
- (7) Vessel inspection requirements.

Responses to each of these recommendations have been discussed in preceding paragraphs of this preamble, in the Final Regulatory Analysis and Environmental Impact Statement, and in the preamble of CGD 77-057a in this issue of the *Federal Register*.

Several commenters recommended that the Coast Guard consider having a workshop or public hearing after all



comments on the proposal have been considered. The Coast Guard does not agree with this recommendation. All the comments submitted to the Coast Guard have been considered before final action was taken on the proposal. Explanations for accepting or rejecting the comments are given in the discussion of this preamble. Coast Guard personnel are always available for discussions regarding these regulations and the comments from the public. Accepting this recommendation would delay issuing these regulations, which would result in the owners having less time to comply with the regulations at the effective dates.

As stated in the preamble of the proposal, the intent of these regulations is to adopt the standards of the MARPOL Protocol.

Several commenters called attention to instances where the proposed rules did not reflect these standards or needed clarification. Accordingly, improvements were incorporated during the Coast Guard's examination of the proposed rules after participation in MEPC XI in which considerable discussion regarding implementation of the MARPOL Protocol took place. Corrections have been made where necessary and are discussed below. Since these changes merely conform the regulations in this document to the announced purpose, implementation of the MARPOL Protocol and the PTSA, no further notice and opportunity for comment on these changes is necessary.

Numerous commenters recommended editorial changes to the proposed regulations. All editorial recommendations were considered by the Coast Guard. Many were adopted in the regulations, where appropriate. In addition, the Coast Guard made numerous other editorial changes to the proposed regulations.

#### *Division I*

Three commenters pointed out that the proposed applicability of Part 157 to foreign tank vessels was not consistent with the applicability requirements of the PTSA. The proposal did not exclude any foreign tank vessel not destined for or departing from a port or place subject to the jurisdiction of the United States that is in innocent passage through the territorial seas of the United States or in transit through the navigable waters of the United States which form a part of an international strait. This exception for foreign tank vessels has been included in § 157.01.

Six commenters requested clarification regarding the applicability of the SBT, CBT, and COW requirements to tank barges. One

commenter said the regulations did not address tank barges and that regulations for tank barges should be issued. One commenter suggested the Coast Guard undertake a study of tank barge oil pollution. The regulations, as proposed, would require tank barges to comply with the SBT, CBT, and COW standards if they are within the applicable DWT limits contained in the regulations. As proposed § 157.10 applies to certain new tank barges of 20,000 DWT or more that carry crude oil and of 30,000 DWT or more that carry products. As proposed, § 157.10a applies to certain new and existing tank barges of 40,000 DWT or more that carry crude oil or products. Regulations for tank barges less than the DWT limits of these regulations were addressed in the Notice of Proposed Rulemaking and Advance Notice of Proposed Rulemaking for tank barges published on June 14, 1979 in the *Federal Register* (44 FR 34440, 34443). A comprehensive study to determine the causes of oil pollution from tank barges was conducted in support of those proposed regulations for tank barges. The study revealed that approximately 85% of all oil pollution from tank barges results from accidents, supporting the requirement for double hulls on tank barges less than the DWT limits of the regulations in this document. The tank barge study also revealed that there was very little data available to establish conclusions on the cause of oil pollution from tank barges of the DWT sizes addressed by the proposed regulations. Because of the limited number of tank barges of the DWT size addressed by the proposed regulations, it cannot be determined, at this time, if there is a need for additional standards on tank barges of this size. Therefore, the Coast Guard has decided to undertake a study to determine the causes of oil pollution from large tank barges of this size. The results of this study will become the subject of a future proposal. Until that time, the regulations in this document will continue to apply to tank barges. Section 157.08(g) has been added to exclude the inapplicable requirement for propeller immersion on tank barges. If the regulations in this document excluded tank barges from these requirements, that exclusion could drive the tanker industry toward construction of large tank barges rather than tankships for economic reasons, with an adverse impact upon the marine environment. Such action could increase the risk of oil pollution because of the higher susceptibility of large tank barges to accidents due, primarily, to their poor maneuvering capabilities. In addition, since there are very few large tank

barges in existence at this time, this action could place demands on the state of the art in the design and construction of large tank barges with adverse consequences upon the marine environment.

The Coast Guard intends to issue an advance notice of proposed rulemaking in a future issue of the *Federal Register* to establish an acceptable definition of the term "integrated tug barge". Until that final definition is published in the *Federal Register*, the definition of "integrated tug barge" provided in this document serves as an interim definition for 33 CFR Part 157 and provides clarification for the reader.

Four commenters requested clarification of the definition of "product" with regard to the applicability of Part 157. Two commenters suggested that in defining "product" or "oil", Part 157 should pertain only to petroleum oils, excluding petrochemicals as intended by IMCO. One commenter requested clarification on the applicability of the proposed regulations to chemical carriers. The PTSA defines oil as "oil of any kind or in any form, including but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil." A product carrier is defined as "a tanker engaged in the trade of carrying oil, other than crude oil." However, when reviewing the legislative history of the development of the equipment and construction requirements of paragraphs (B), (C), (G), (H), and (I) of subsection 7 of Section 5 of the PTSA, it is clear that with respect to the products carried, the requirements in these paragraphs were intended to be consistent with the standards for a product carrier developed at the TSPP Conference. The equipment and construction standards for a product carrier developed at the TSPP Conference pertain only to tank vessels that carry petroleum based products, not including petrochemicals and liquified gases. In view of this, the definition of "product" has been changed to mean "any liquid hydrocarbon mixture in any form except crude oil, petrochemicals, and liquified gases." With this definition of product, the proposed regulations for tank vessels that carry products is not applicable to those vessels which carry oils other than petroleum based oils, such as vegetable oils, and those vessels that carry petrochemicals or liquified gases. In this regard a chemical carrier that only carries petrochemicals does not have to comply with these regulations; however, if the chemical carrier carries any petroleum based oil other than petrochemicals, that vessel



must comply with the applicable requirements for a product carrier when carrying that petroleum based oil. Regulations affecting tank vessels that carry petrochemicals and oils other than petroleum based oils can be issued under the authority of subsection 6 of Section 5 of the PTSA in addition to the existing regulations applicable to these vessels in 46 CFR Subchapter O. The Coast Guard is in the process of determining which additional standards tank vessels that carry petrochemicals and oils other than petroleum based oils must meet. This determination will be part of a future rulemaking. Regulations affecting tank vessels that carry liquefied gases were issued by the Coast Guard on May 3, 1979 in the Federal Register (44 FR 25986).

Section 157.06 has been added to the proposed regulations to provide a procedure for persons to administratively appeal adverse rulings made by Coast Guard officials regarding these regulations. The procedure is intended to allow for timely resolution of disputes.

Several commenters expressed concern that there appeared to be a conflict between the proposed requirements for a new vessel in § 157.10 and a new vessel in § 157.10a. The commenters are of the opinion that new vessels had to meet the requirements of both § 157.10 and § 157.10a, where applicable. This is not true. Section 157.08(f) was included in the proposed regulations to eliminate any conflict between the requirements of the two sections for a new vessel. Section 157.10 only applies to a new vessel, within certain DWT limitations, that is contracted for after June 1, 1979, has the keel laid after January 1, 1980, is delivered after June 1, 1982 or has undergone a major conversion after specified dates. Section 157.10a applies to an existing vessel, within certain DWT limitations, and a new vessel (as defined in § 157.03(i)), within certain DWT limitations, that is contracted for on or before June 1, 1979, has the keel laid on or before January 1, 1980, and is delivered on or before June 1, 1982 or in the case of a major conversion, has undergone the major conversion on or before specified dates.

One commenter recommended that tank vessels contracted for before June 1, 1979 that for some reason have delivery delayed until after June 1, 1982 be considered a tank vessel under § 157.10a instead of under § 157.10. The PTSA contains no provision that addresses this issue; however, this issue was discussed by IMCO at MEPC XI. It was agreed that if a tank vessel is

contracted before June 1, 1979, but has delivery delayed until after June 1, 1982, the Administration should evaluate the reasons for the delay to determine whether or not the delay occurred through no fault of the shipbuilder and the prospective owner. The Coast Guard will consider possible solutions to this situation on an individual case basis.

In proposed § 157.10(b) and § 157.10a(c), the limitation of applicability of these requirements to tank vessels above the specified DWT that carried "only products" was incorrect. The term "only products" was a drafting error that did not reflect correctly the requirements of the PTSA and the MARPOL Protocol for product carriers. By omitting the word "only", a tank vessel that carries crude oil and product during the same voyage must comply with the applicable requirements for both services during that voyage. This is the intent of the PTSA and the MARPOL Protocol. If the word "only" was not omitted, a tank vessel that carries crude oil and product during the same voyage need only have SBT or a COW system to comply with the proposed regulations. While SBT would be satisfactory for the vessel when carrying crude oil and products during the same voyage, a COW system would not. This drafting error has been corrected to reflect the intent of the PTSA and the MARPOL Protocol.

Two commenters recommended that a tank vessel be allowed to carry petroleum products and crude oil during the same voyage, while only complying with the requirements of either a product carrier or a crude oil carrier. They suggest that the tank vessel be certified for the service in which the vessel does the majority of trading (product or crude oil) and be allowed to trade in the other service without complying with the requirements for that service. As mandated by the PTSA, a product carrier under § 157.10a is required to be equipped with CBT or SBT and a crude oil carrier under § 157.10a is required to be equipped with SBT or a COW system with CBT as an option for a certain time period. As discussed in the preceding paragraph, a tank vessel that carries crude oil and products during the same voyage must comply with the applicable requirements for both services. In view of these provisions of the PTSA, the commenters' recommendation is rejected.

Two commenters recommended that the proposed regulations allow for the change of services between voyages. They suggest that a crude oil carrier be allowed to carry products on one voyage

and crude oil on the next voyage and a product carrier be allowed to do the same. There are certain tank vessels which are currently used in this type of trade depending on the needs of the oil market. This issue was discussed by IMCO at MEPC XI. It was determined that a tank vessel may change services between voyages, provided that when carrying crude oil the tank vessel complies with § 157.10a(a) or (b) and when carrying products the tank vessel complies with § 157.10a(c). If the owner selects the options of CBT when carrying products and a COW system when carrying crude oil, the tank vessel may carry crude oil in all the tanks, including those designated as CBT, as long as the tanks designated as CBT are crude oil washed, water rinsed, and inspected for cleanliness prior to using the tank for CBT. In view of the fact that these regulations do not prohibit the changing of services between voyages, an additional provision to allow such changing is not considered necessary. Each U.S. tank vessel's Certificate of Inspection will be endorsed by the Coast Guard to reflect the vessel's trade. When the owner/operator desires to change the trade for that vessel, the Certificate of Inspection of that vessel will be re-endorsed for the new trade provided the vessel complies with the applicable requirements for the new trade. The same applies to the Certificate of Compliance for foreign tank vessels. This issue will be further discussed by IMCO at MEPC XII.

One commenter recommended that the SBT required on tank vessels under proposed § 157.10a be located within the vessel in accordance with Appendix C, *Procedure for Determining Distribution of Segregated Ballast Tanks to Provide Protection Against Oil Outflow in the Event of Grounding, Rammings, or Collision*. This recommendation is not consistent with the standards reached at the TSPP Conference; however, in view of the fact that the location of SBT in wing tanks could provide an added measure against accidental pollution, a note has been added after § 157.10a stating that SBT in wing tanks will provide added protection against oil outflows resulting from collisions, rammings, and groundings. While the location of SBT is at the discretion of the vessel owner, the note calls attention to the advantages of locating SBT in wing tanks. In addition to complying with the SBT requirements in § 157.10 or § 157.10a, the intact and damage stability requirements in 33 CFR 157.21 and 46 CFR Part 30 must be met when applicable.



Three commenters stated that the wording of proposed § 157.11(d)(4) and (e)(3), which requires an oil piping line that terminates on the weather deck at the extreme breadth of the deck, does not reflect the intent of the MARPOL Protocol for a piping line that is connected outboard of the ship's manifold valves. The Coast Guard concurs with this comment and has changed § 157.11(d)(4) and (e)(3) to correctly reflect the standard of the MARPOL Protocol.

It was agreed by IMCO at MEPC XI that the "special small diameter piping line" that terminates on the weather deck outboard of the manifold valves for discharging strippings ashore should have a cross sectional area of not more than 10 percent of the cross sectional area of the main cargo discharge piping line, except on tank vessels already having such a piping line installed. For those tank vessels the cross sectional area of that piping line should not be more than 25 percent of the cross sectional area of the main cargo discharge piping line. This larger piping line is allowed so that tank vessel owners/operators who took the initiative to have such a piping line installed on their tank vessel before it was mandatory, would not be required to install a smaller diameter piping line. The provision of the MARPOL Protocol regarding the size of this oil piping line stipulated a "special small diameter piping line". It was determined that a clearer definition of this term should be provided. Section 157.11(f) has been added to provide this clarification.

One commenter stated that the proposed regulations revising § 157.11 which were published in the *Federal Register* on June 27, 1977 (42 FR 32670), were not withdrawn, thereby creating a conflict in the paragraph numbering of § 157.11 between the proposal of June 27 and these regulations. Final regulations for the proposal of June 27 will be issued in the near future. When they are issued as final regulations, the paragraph numbering of § 157.11 will be consecutive and will eliminate the conflict noted by the commenter.

One commenter recommended that a requirement should be added for a means to transfer oil from each cargo tank to each SPT or CBT if an accident occurs that results in oil pollution from a cargo tank. This recommendation is not consistent with the standards for SBT in the MARPOL Protocol or existing 33 CFR Part 157 regulations which require SBT to be completely separated from the cargo system. While there may be a few instances where this capability could reduce the extent of oil pollution, it is

completely contrary to the principle of SBT. In view of this, the commenter's suggestion is rejected. CBT will most likely have such a means by virtue of the common piping system.

The Coast Guard has rewritten proposed § 157.24(c) to allow the tank vessel's flag state to certify compliance with the segregated ballast tank distribution requirements of § 157.09(d) or § 157.10(d). This alternate requirement provides the Coast Guard with equally acceptable and reliable evidence to show compliance with the SBT requirements.

Four commenters identified circumstances where it would be necessary to add ballast water to a cargo tank other than during the circumstances allowed in proposed § 157.35, such as when transiting through the Panama Canal, passing beneath certain bridges, or situations involving vessel safety which go beyond the ballasting anticipated by that section. This issue was addressed at MEPC XI. Some Administrations are of the opinion that vessels which must frequently take on additional ballast because of these circumstances should be fitted with additional SBT capability. Other Administrations are of the opinion that cargo tanks may be used for the carriage of any additional ballast provided this oily ballast is discharged to a shore-based reception facility. Those Administrations which are of this second opinion feel there would be difficulty in defining "frequently". It was recommended that Administrations consider this subject further at MEPC XII. Therefore, this item will be the subject of a future rulemaking.

One commenter took exception to the fact that proposed § 157.35 only allowed a tank vessel under § 157.10 to ballast a cargo tank after the tank had been crude oil washed. This requirement was developed at the TSPP Conference and provides an assurance that certain cargo tanks on a tank vessel under § 157.10 are crude oil washed prior to each ballast voyage when crude oil washing for sludge control is not required.

One commenter recommended that effluent from cargo tanks that are ballasted as allowed under proposed § 157.35 be permitted to be discharged to adequate reception facilities. As previously discussed, standards for reception facilities will be addressed in a future proposal.

One commenter stated that it would be reasonable to allow the use of center tanks for SBT or CBT on tank vessels under proposed § 157.10 provided the protective location requirements of Appendix C are met. CBT is not required on tank vessels under § 157.10, but other

than that, the Coast Guard concurs with the commenter's statement and would allow the use of center tanks for SBT provided the protective location requirements of Appendix C are met.

One commenter recommended that Appendix C be deleted in its entirety because it "steers" the ship designer to double bottoms which would only create "bad experiences" when a tank vessel goes aground. As previously discussed, the uncertainties of accidental oil pollution make it impossible to produce a reliable quantitative comparison of double bottoms vs. protectively located SBT in wing tanks. Salvage experts disagree among themselves as to whether double bottoms will help or hinder salvage efforts. The issue is almost entirely subjective. IMCO recognized this problem and recommended a study of the issue in Resolution 17 of the TSPP Conference. The Coast Guard is planning to work through IMCO on a data collection service to aid in removing some of the uncertainties of accidental oil pollution. Until that is accomplished, Appendix C will be used as the procedure for protectively locating SBT.

#### *Division II—Dedicated Clean Ballast Tanks*

One commenter recommended adding requirements that hull stresses be within the acceptable limits in the resulting ballast and loaded conditions of a tank vessel with CBT and that the Master should ensure that the hull stress is at all times within acceptable limits. The proposal pointed out that 46 CFR 31.10-1 requires each tank vessel to meet current American Bureau of Shipping (ABS) standards relating to material and construction of the hull; therefore, adding a requirement concerning hull stresses in these regulations would be redundant. This statement is true with regard to U.S. tank vessels; however, it is not true with all foreign flag tank vessels. Acceptable hull stresses resulting from location of CBT for U.S. tank vessels can be easily verified by the Coast Guard through ABS. This will not always be the case for foreign flag tank vessels which have the CBT system approved by the Coast Guard. In view of this, a requirement has been added in § 157.202 stating that the owner of a foreign flag tank vessel having CBT under § 157.10a(b) or (c)(2) desiring Coast Guard approval of the vessel CBT system must submit documentation from the authority that assigned the Load Line to the vessel that states that the location of CBT is acceptable to that authority. This provision is in the MARPOL Protocol and, as stated in the proposal, the Coast Guard intended to



adopt these standards. In addition, the Master must always ensure that the hull stresses are within acceptable limits at all times; therefore, an operating requirement stating such is not necessary.

Three commenters thought the Coast Guard did not demonstrate a preference for locating CBT in wing tanks rather than center tanks. The proposal stated that CBT must be in wing tanks or center tanks that are accepted by the Commandant. The intent was that if center tanks are selected for CBT, the tanks selected must be acceptable to the Commandant. The selection of wing tanks for CBT does not require specific acceptance by the Commandant. This expresses a preference for locating CBT in wing tanks. Section 157.220(b) has been rewritten to clearly express this intent.

One commenter expressed the opinion that locating all CBT in wing tanks would be difficult and at times impractical. The commenter suggested that use of one or two center tanks be allowed for CBT. The regulations do not prohibit the use of center tanks or double bottom tanks for CBT, but merely calls the designer's attention to considering wing tanks. If for some reason the designer thinks it is best to use a center tank or a double bottom tank for CBT, the Commandant will review the reasons for locating CBT in a center tank or double bottom tank on that vessel and either accept or reject the request. Rejection of the request may be appealed under the procedures contained in new § 157.06.

Three commenters took exception to the requirement in the proposal for CBT to be those cargo tanks which have the least amount of oil conveyed through the pumping and piping system. This has been misconstrued to mean CBT must be in the smallest cargo tanks, hence the least amount of oil conveyed. In addition, the commenters thought that the requirement in the proposal invokes a requirement beyond that intended by IMCO at the TSPP Conference. In view of the fact that § 157.222(a) requires CBT to be connected to the least practicable amount of piping, the requirement for CBT to have the least amount of oil conveyed through the pumping and piping system has been omitted.

Six commenters stated that proposing CBT to be connected only to one pump was totally impractical and exceeds the concept of CBT that was intended by IMCO. The points were raised that many product carriers have only a deepwell pump in each tank to service that tank. Other arrangements usually include connection of the pumps to a common suction manifold. Both of these

points raised would make the operation of a CBT system, while connected to only one pump, totally impractical. These points are valid reasons for eliminating the requirement for CBT to be connected only to one pump but, to maintain consistency with the IMCO wording, § 157.222(a) has been rewritten to require that CBT must be connected to the least practicable number of pumps.

Two commenters recommended that all CBT operating requirements which apply to foreign vessels while operating in the navigable waters of the U.S. should also be applicable when the foreign vessel is outside U.S. waters. They suggested a requirement be added to the regulations stating this, so the integrity of foreign vessel CBT is maintained prior to entering U.S. waters. Under Section 5 of the PTSA, the Coast Guard has no authority for such a requirement.

One commenter suggested that the sample point proposed in the CBT piping system be located in a vertical section of the discharge piping and not just in a vertical section of piping as stated in the proposal. This would be more explicit in defining where the sample point should be located and as a practical matter, would be the usual location. Accordingly, the word "discharge" has been added to § 157.222(e).

One commenter pointed out that the type of sample point required in the proposal is designed for a test rig and would be unsuitable in dimension and shape for location in shipboard discharge piping. The Coast Guard concurs with this statement and has omitted the specification for the type of sample point that must be installed, but has added a note following § 157.222(e) to direct the reader to an example of such a sample point.

One commenter suggested that the regulations take into account any changes IMCO may agree upon regarding the installation of oil monitors. This document has incorporated the agreements reached by IMCO at MEPC XI regarding oil monitors in a CBT system that are within the scope of the notice of the proposed rules of February 12, 1979. Any future agreements reached at IMCO will be considered by the Coast Guard and be the subject of future proposals.

One commenter asked why oil monitors are required on tank vessels if SBT or CBT is required. On tank vessels with SBT or CBT, an oil monitor is required to assure that if a cargo tank is ballasted as allowed under § 157.35, the discharge of that ballast is in accordance with § 157.37. In addition, ballast from a dedicated clean ballast

tank must be discharged in accordance with § 157.43 which requires the discharge of clean ballast to be monitored.

One commenter recommended that all discharges from tank vessels into inland or coastal waters should be limited to 15 ppm or less. The Federal Water Pollution Control Act Amendments of 1972 (33 U.S.C. 1321(b)(3)) prohibit discharging into or upon the navigable waters of the United States oil or hazardous substances "in harmful quantities as determined by the President" who has delegated this authority to the Environmental Protection Agency (EPA). The EPA has defined "harmful quantities" in 40 CFR 110.3.

One commenter asked if an existing tank vessel is permitted to discharge clean ballast or segregated ballast below the waterline. Clean ballast from a cargo tank or a dedicated clean ballast tank must be discharged in accordance with § 157.43(a) which requires that clean ballast be discharged through an oil monitor. At the present time, there is no requirement that clean ballast be discharged above the waterline; however, in the *Federal Register* on June 27, 1977 (42 FR 32684) it was proposed that clean ballast be discharged above the waterline (proposed § 157.37(a)(5)). That proposal is currently being reevaluated for consistency with IMCO standards (which do not require clean ballast to be discharged above the waterline). Segregated ballast must be discharged in accordance with § 157.43(b) which does not prohibit the discharge of segregated ballast below the waterline.

Nine commenters stated that the proposed requirement to prohibit the ballasting of dedicated clean ballast tanks during the loading or unloading of cargo is too restrictive and would exceed the intention of the CBT operating requirements agreed to at the TSPP Conference. Product carriers with deepwell pumps in each tank would allow the ballasting of CBT while loading or unloading cargo without violating the integrity of the CBT system. Further, 157.222(d) requires a double valve separation between CBT and cargo tanks which would maintain the integrity of the CBT system on tank vessels without deepwell pumps. Finally, IMCO had no intention of prohibiting the ballasting of CBT while loading or unloading cargo. In view of this information, the requirement to prohibit the ballasting of CBT during the loading or unloading of cargo has been omitted.

One commenter noted that it was proposed that a letter indicating



compliance with the CBT requirements would be issued to each tank vessel instead of the IMCO required International Pollution Prevention Certificate until the MARPOL Protocol comes into effect. The commenter suggested that a certificate be issued even if the MARPOL Protocol does not come into effect. The PTSA requires the issuance of a Certificate of Inspection to all U.S. tank vessels and the issuance of a Certificate of Compliance to all foreign flag tank vessels that are in compliance with Section 5 of the PTSA and the regulations issued under that Section. The letters issued by the Coast Guard will evidence compliance with only a portion of Section 5 of the PTSA. Those letters will be used by the Master to show that the vessel complies with the applicable portions of Section 5 of the PTSA and the regulations issued thereunder, regardless of whether or not the MARPOL Protocol comes into effect and subsequent IMCO certificates are issued. When the MARPOL Protocol comes into effect and International Oil Pollution Prevention Certificates are issued, that document will be accepted by the Coast Guard as a basis for issuing a Certificate of Compliance to a foreign tank vessel.

Three commenters stated that procedure I.4 of the proposed Appendix in Division II requires a visual inspection of all CBT prior to discharge. They point out that such an inspection would be almost impossible for double bottoms. The proposed Appendix which has been included in 33 CFR Part 157 as Appendix D is only an example of a check list. There are no requirements which must be met in the check list. The Appendix is included only as guidance to serve as a model for the preparation of CBT procedures which will probably vary from ship to ship depending on the CBT arrangement and design.

#### *Division III—Crude Oil Washing System*

Two commenters noted that the IMCO terms "arrival ballast" and "departure ballast" and their definitions were not included in the proposal. The commenters recommended that these two terms and their definitions be included in the regulations. The appropriate locations in the proposal for these two terms to be used do not occur frequently enough to warrant the addition of these two terms and their definitions to the regulations. Rather than adding these terms and their definitions to the regulations, the proposal substitutes the definitions for the terms "arrival ballast" and "departure ballast" at the appropriate locations in the regulations.

Two commenters noted that the requirements for the COW piping, fittings, and valves to be of steel or other equivalent metal would prohibit the use of other materials that might be acceptable to the Coast Guard for the COW piping system. In addition, such a requirement is not consistent with the IMCO requirements which allow the use of steel or other equivalent material. The Coast Guard concurs with this comment and has rewritten 157.122(a) to allow steel or an equivalent material accepted by the Commandant.

It was agreed by IMCO during MEPC XI that on combination carriers short lengths of flexible hose piping could be used to connect COW piping to COW machines that are located in a cargo tank hatch cover. The hose must be acceptable to the Administration, have flanged connections, and be protectively stowed when not installed in the COW piping system. The length of the hose shall be no longer than necessary to connect the COW machine to an adjacent point just outside the hatch coaming. Sections 157.122(a) and 157.155(a)(14) have been added to reflect these requirements. This is a discretionary alternative to a requirement which maintains the same degree of safety and protection to the marine environment.

It was agreed by IMCO at MEPC XI to delete any specific reference to materials for the stripping system of a tank vessel with a COW system. Requirements for a stripping system on a tank vessel with a COW system should be no different than those requirements for a tank vessel that does not have a COW system. Regulations currently exist which govern the design of all piping systems including stripping systems. In view of this, material requirements for the stripping system have been omitted from 157.122.

One commenter stated that it is not clear whether or not the fire main system can be connected to the COW system. It was not proposed that the fire main could be connected to the COW system. To clarify this ambiguity and to eliminate any doubt, a procedure to ensure that the fire main is not connected to the COW system has been added as a requirement in the COW manual under 157.155(a)(13). However, this does not prevent the use of the fire main as a source of water for water washing a tank with a washing machine that is placed through an opening in the deck. This use of the fire main is allowed by Coast Guard regulations and is not prevented by the regulations of this document.

Three commenters recommended that the regulations allow for the alternative

use of other overpressure relief devices, rather than requiring only relief valves. They point out that IMCO allows for alternatives acceptable to the Administration to prevent overpressurization of the piping system. Section 157.122(d) has been rewritten to require overpressure relief valves or other means accepted by the Commandant that prevent overpressure of the piping of the COW system.

Six commenters felt that the proposed design and arrangement requirement for the piping of the COW system to have sufficient pressure and flow to allow the number of COW machines needed to pass the Coast Guard inspections to operate simultaneously is totally impractical. They felt that such a requirement would dictate tremendously oversized piping which is absolutely unnecessary. The Coast Guard concurs with this comment and has omitted the requirement from the regulations in this document.

It was agreed by IMCO during MEPC XI that only steam heaters located outside the engine room and used when water washing need be effectively isolated during crude oil washing by double shut-off valves or by blanks. In view of the requirement in Resolution 15 that equipment of the COW system is not allowed in machinery spaces, a steam heater located in the machinery spaces could not be used in COW operations. This is a clarification to Resolution 15 which required steam heaters that are used for water washing to be isolated during crude oil washing. Accordingly, § 157.122(i) has been changed to reflect this clarification.

Ten commenters objected to the proposal that the COW machines be permanently attached to the inside of each cargo tank because it would be extremely impractical to remove the machines for repair and maintenance. The current method of attaching deck mounted machines is to bolt the structure of the machine to the deck from outside the tank. In view of these comments, § 157.124(a) has been rewritten to require COW machines to be permanently mounted in each cargo tank. This wording is more consistent with the wording of IMCO and allows the current method of bolting the structure of the machine to the deck outside the tank.

One commenter recommended deleting the proposed requirement that each COW machine and its piping be supported to withstand vibration and pressure surges because there is a requirement to test the piping system to 1.5 times the working pressure. The pressure test of 1.5 times the working pressure is only a hydrostatic test to be



conducted after the system is assembled. This test will not account for any sudden, temporary pressure surges or vibratory responses which could cause damage to the equipment if it is not sufficiently supported. The pressure test is necessary for testing the system following installation. The performance requirement is necessary so that structural supports for the COW machine and its associated piping will be properly designed. Both requirements are retained.

One commenter suggested omitting the proposed requirement for a shut-off valve on bottom mounted COW machines which have remote monitoring (an indicator on deck which shows the machine's movement). The commenter contends that a bottom mounted machine which has a remote monitor indicating its movement would not need a shut-off valve to be closed when audio inspecting other bottom mounted COW machines in the tank. The requirement in the proposal for each COW machine to have a shut-off valve is not consistent with the standard in Resolution 15. Resolution 15 only requires bottom mounted COW machines that have their operation verified by audio inspection and deck mounted COW machines to have individual shut-off valves. In view of this, the Coast Guard concurs with this comment and has changed § 157.122(n) to correctly reflect this intent.

Four commenters recommended that the regulations allow the use of acceptable materials other than steel for the plate used to seal a tank opening when a deck mounted COW machine is removed. The Coast Guard concurs with this comment, provided the material selected meets the applicable strength and fire protection requirements. Section 157.170 has been changed to allow the use of an equivalent material accepted by the Commandant for the tank opening cover plate.

Seven commenters took exception to the proposed operating requirement that no portable drive unit for the COW machines may be moved more than twice from its original location. The intent of the IMCO requirement for portable drive units was only to establish the minimum number of portable drive units to be carried on board each tank vessel. The proposal carried this requirement a step beyond that which was intended by IMCO and placed a restriction on how many times each portable drive unit may be moved. It was pointed out that such a restriction could adversely affect the operation of the COW system if one or more of the portable drive units break down. In view

of this, the operating requirement has been omitted and the design requirement in § 157.124(d) has been rewritten to establish the minimum number of portable drive units to be carried on board, without restricting the number of times a portable drive unit may be moved.

Eleven commenters strongly objected to elimination of the term "large primary structural member" from the proposed regulation that determines the percent of cargo tank washed by direct impingement from the COW machines. By eliminating this term, which was included in the requirements of Resolution 15, the Coast Guard would require that virtually every surface, excluding the 10% horizontal area and the 15% vertical area exceptions, must be washed by direct impingement. If adopted, this requirement would result in an inordinate number of COW machines in each cargo tank which would produce very little difference in the amount of oil entering the navigable waters of the United States and the world, while increasing the cost of a COW system tremendously. The Coast Guard concurs with these comments and has added to § 157.03 the definition of "large primary structural member". This definition was developed from the guidelines for the assessment of shadow diagrams established by IMCO at MEPC XI. It was also agreed at MEPC XI that swash bulkheads could be treated as tank boundaries and are, therefore, included as vertical areas in § 157.124(e) and (f). In addition, § 157.124(e) has been revised to correctly reflect the intent of the standard in Resolution 15 regarding the percent of cargo tank area washed by direct impingement.

One commenter recommended that the proposed requirements for the percent of horizontal and vertical cargo tank areas that must be washed by direct impingement be calculated on a "per ship basis" for tank vessels under § 157.10a, rather than on a "per tank basis" as proposed. This issue was discussed by IMCO at MEPC XI, to determine if such a requirement would allow the operators or designers of existing tank vessels more flexibility in locating COW machines without adversely affecting the marine environment. It was determined that if a tank vessel under § 157.10a has a tank or tanks with complicated internal structural members, that tank vessel should be allowed to meet these requirements by calculating the percent of the total horizontal and vertical areas of all the cargo tanks washed by direct impingement. This is allowed to reduce the problems associated with locating

and installing COW machines on an existing tank vessel. Although this exception is allowed on a "per ship basis", the cargo tank inspection requirements under § 157.140 must still be met. Tank vessels under § 157.10 must meet the direct impingement requirements on a per tank basis because such tank vessels can be designed to accommodate COW systems. In view of this, § 157.124(f) has been added to these regulations to reflect this determination. This determination will maintain the same degree of protection to the marine environment while being less stringent than the requirement of the proposal.

One commenter noted that the proposed criteria for approval of the COW machine design are "not fully defined", nor is it clear what design data is to be supplied for approval. The COW machine internal and external structure (design), material, and safety aspects will be evaluated as a component of the overall COW system design when submitted by the tank vessel owner for review and approval in accordance with these regulations and the applicable regulations in Subchapters D and F of Title 46. The Coast Guard will not verify the performance of each COW machine, but rather will accept or reject the performance of the COW system by virtue of the inspections under § 157.140 based on the performance of the whole COW system.

Two commenters pointed out that the proposed regulations required only that the Coast Guard inspect those cargo tanks which are to be used as ballast tanks when leaving a port (departure ballast tanks). This is not consistent with the IMCO standards which require all cargo tanks to be visually inspected and only departure ballast tanks to be inspected for the 0.085 percent of oil floating on top of ballast water. This inconsistency was a drafting error when interpreting the IMCO standards. Section 157.140(a) has been rewritten to correctly reflect the intent of the IMCO standard.

Ten commenters disagreed with the proposed regulation which replaces the visual inspection criterion in Resolution 15 of "essentially free of oil" with the term "does not have oil clingage or deposits of oil, or both". The wording of the proposal was meant to have the same intent as that of the IMCO standard; however, the commenters felt this this wording did not reflect the same intent. In view of this ambiguity, § 157.140(a)(1) has been rewritten to more clearly reflect the intent of the IMCO standard by replacing the term "does not have oil clingage or deposits



of oil, or both" with the term "essentially free of oil clingage or deposits of oil, or both to a degree acceptable to the Coast Guard inspector" for the visual inspection criteria. This is not a substantive change to the regulation.

Three commenters recommended that the proposed inspections under § 157.140 be conducted by qualified Coast Guard personnel and that a course be given by the Coast Guard to properly train the inspectors in COW system operations and results. The Coast Guard concurs with these comments and has initiated a training program for inspectors.

One commenter asked if a classification society would be allowed to conduct the inspections under § 157.140 in lieu of the Coast Guard. The Coast Guard is considering the possibility of accepting inspections under § 157.140 which are conducted by an exclusive surveyor from a classification society. Until a determination has been made on this subject, the Coast Guard intends to conduct all inspection under § 157.140.

One commenter asked how often the Coast Guard inspections under § 157.140 would be conducted on a tank vessel. It is intended that the Coast Guard would make an initial inspection under § 157.140 to accept the performance of the COW system for issuance of a COW system letter of acceptance under § 157.142. However, the inspections under § 157.140 must also be conducted if a master desires to operate the COW system with characteristics less than those recorded under § 157.150 in the COW Manual. Section 157.158(b) addresses this situation. In addition, the Coast Guard will be making spot checks aboard tank vessels crude oil washing in U.S. ports to ensure that COW systems are operated in accordance with the accepted operating characteristics recorded in the COW manual. When making these spot checks, the inspection described in § 157.140(a)(2) may be utilized.

Four commenters objected to the proposed requirements that each deck mounted COW machine have an indicator that shows the rotation and arc of the movement of the machine. They state that the proposal for such an indicator would preclude the use of multi-nozzle COW machines because it would be impossible to ascertain the arc of a constantly rotating multi-nozzle machine. Neither the Coast Guard nor IMCO intended to prevent the use of multi-nozzle machines by requiring this indicator. The Coast Guard concurs with this comment and has added § 157.124(h) to require each deck

mounted multi-nozzle COW machine to have a means that indicates the movement of the machine during COW operations. This correction to an error in Resolution 15 and the proposal maintains the same degree of safety and protection to the marine environment.

Two commenters suggested that the Coast Guard allow audio inspection in lieu of an indicator to determine if deck mounted multi-nozzle COW machines are operating correctly. Audio inspection is permitted for bottom mounted COW machines because indicators for these machines may be impractical from an equipment, maintenance, and reliability viewpoint. Indicators for multi-nozzle deck mounted machines are currently used on tank vessels and are considered reliable. Correct performance of the COW machines is paramount to assuring satisfactory operation of the COW system and an indicator is a reliable method of assuring correct performance of a COW machine. It has been determined that all deck mounted machines should have an indicator that shows the movement of the machine; therefore, audio inspection will not be allowed as a substitute for an indicator to determine the correct operation of a deck mounted multi-nozzle COW machine.

Two commenters were of the opinion that audio inspection of bottom mounted COW machines during COW operations to verify the machines' operation would result in prolonged crude oil washing times and would unnecessarily delay the departure of the tank vessel. They recommended that all bottom mounted machines be inspected and tested on ballast voyages, instead of during COW operations. This issue was a topic of discussion at MEPC XI. It was determined that any one of three methods would be acceptable to verify the operation of a bottom mounted COW machine. The first method is visual inspection of an indicator located external to the tank which shows the movement of the machine during COW operations. The second method is audio inspection of the COW machine during COW operations. This is the method of inspection in the proposal. During this method of inspection, the machine being inspected must be the only one operating in the same tank. The third method is inspection of the machine during a ballast voyage. During this inspection, water is used as the fluid flowing through the machine. Before conducting this inspection, the tank that has the machine to be inspected in it must be gas freed for safe entry of the person making the inspection. If this

method of inspection is utilized, the inspection must take place at least once every six times that machine is used during COW operations, but the interval between inspections must not exceed one year. These alternative methods of inspection have been included in the regulations as alternative procedures that must be included in the *Crude Oil Washing Operations and Equipment Manual* under § 157.155(a) (4), (5), (6), and (7). These discretionary alternatives will maintain the same degree of safety and protection to the marine environment as the proposal.

Two commenters recommended that instead of prohibiting the use of programmable bottom mounted COW machines, the regulations should permit their use if technical development produces an acceptable, reliable machine. The key to assuring the satisfactory operation of a programmable bottom mounted COW machine is an indicator on deck that shows the movement of the machine. Therefore, § 157.124(i) has been rewritten to allow the use of programmable bottom mounted machines provided an indicator is located on deck showing the movement of the machine.

One commenter was of the opinion that the proposed design requirement for the COW pumps to produce sufficient pressure and flow to allow the number of COW machines needed to meet the Coast Guard inspections to operate simultaneously is impractical. It was felt that the requirement would result in pumps extremely overrated for the capacity in which they will be operated. The Coast Guard concurs with the comment and has rewritten § 157.126(b) to require a pump capacity that will allow the simultaneous operation of the COW machines that are designed to operate simultaneously.

Eight commenters were of the opinion that the proposed requirement for the COW system to have two or more pumps supplying oil to the COW machines implied that two or more pumps must be simultaneously pumping oil to the COW machines. The intention of the regulation was only to have two pumps capable of supplying oil to the COW machines. To remove any ambiguity, § 157.126(d) has been rewritten to require two or more pumps capable of supplying oil to the COW machines.

One commenter pointed out that the standard in Resolution 15 which requires that the carriage of more than one grade of cargo shall not prevent crude oil washing of tanks was not correctly reflected in the proposed regulations because the regulations



required that the COW system be designed to allow crude oil washing with more than one grade of crude oil. The commenter states that the same result could be accomplished with an operational procedure. The Coast Guard concurs with this comment and has rewritten § 157.130 to require that the COW system be capable of crude oil washing with more than one grade of crude oil.

Five commenters objected to the proposed requirement that the stripping system be designed to remove crude oil at a rate of 1.25 times the rate at which all COW machines are operating simultaneously. Resolution 15 requires the stripping system to remove crude oil "at a rate of 1.25 times the total throughout of all the tank cleaning machines to be operated simultaneously when washing the bottom of the cargo tanks." Section 157.128(a) has been rewritten to correctly reflect this standard by requiring that the stripping system be designed to remove crude oil from each cargo tank at 1.25 times the rate at which all the COW machines, that are designed to operate simultaneously when washing the bottom of the tank, are operating.

One commenter expressed opposition to any regulation which requires only a closed gauge system for sounding cargo tanks. The proposed regulations did not require only a closed gauge system for sounding cargo tanks.

Nine commenters objected to the proposed requirement for hand dipping as the method for determining the dryness of the cargo tanks. This issue was discussed by IMCO at MEPC XI. It was determined that other means which efficiently ascertain that the bottom of a cargo tank is "dry" should be allowed. The Coast Guard concurs with this determination and has rewritten § 157.128(b) to require each cargo tank to be designed for sounding to determine the dryness of the tank by hand dipping or a means accepted by the Commandant.

Two commenters recommended that the three other locations for hand dipping should be more specifically stipulated in the regulations. The internal structure and design of each tank varies on each tank vessel. For this reason, three other locations cannot be adequately specified in these regulations to assure satisfactory sounding of each cargo tank on every tank vessel. The intent of this requirement is to make sure all the crude oil that can be removed, is removed from the tank by the stripping system. The location of the three other locations for hand dipping should be determined by the designer to accomplish this intent. In view of this,

the three other locations for hand dipping are not more specifically stipulated in these regulations.

One commenter objected to the proposed requirement for hand dipping at the aftermost portion of the tank if the stripping suction is not located at the aftermost portion of the tank. The location for sounding the tank by hand dipping at the aftermost portion of the tank was proposed because that is where the majority of stripping suctions are located. In addition, tank vessels normally trim by the stern while unloading, thus oil will accumulate at the aftermost portion of the tank. It would be extremely difficult to determine whether or not all the crude oil has been removed from the tank if there is not a method of measuring the quantity of oil at the stripping suction. If the stripping suction is not located at the aftermost portion of the tank, the Coast Guard recommends that one of the other three locations for hand dipping should be placed at the stripping suction to assure the operator that the tank is "dry" for compliance with § 157.155(a)(8)(ii).

Two commenters recommended that the regulations allow the use of alternative methods, other than pumps or eductors, for stripping oil from the cargo tanks, as allowed by Resolution 15. The Coast Guard concurs with this statement and has rewritten § 157.128(c) to permit the use of a device accepted by the Commandant for stripping oil from each cargo tank.

One commenter recommended that the regulations assure that the appropriate monitoring device is required on the correct type of pump, if a pump is selected for stripping oil, rather than just require one of the monitoring devices to be in the stripping system. The Coast Guard concurs with this comment and has rewritten § 157.128(e)(2) to require that the stripping system have a monitoring device that indicates operation of the pump.

It was agreed by IMCO during MEPC XI that all cargo tanks are to be stripped before the tank vessel leaves its final port of discharge. This was discussed to clarify the requirement that all strippings be passed ashore through the special small diameter piping line connected to the discharge piping outboard of the manifold valves at the end of cargo discharge. Cargo discharge is not complete until the cargo tanks are stripped of oil. Accordingly, the procedure under § 157.155(a)(9) has been clarified to ensure that all cargo tanks are stripped before the tank vessel begins each ballast voyage. This does

not change the substance of the regulations.

One commenter noted that the proposed requirement for a cargo tank to be designed for longitudinal and transverse drainage of crude oil to allow the tank vessel to pass the Coast Guard inspections under § 157.140 may be appropriate for new construction of tank vessels, but might be impractical for existing tank vessels. If an owner feels that an existing vessel cannot pass the Coast Guard inspections because the tank design does not permit sufficient drainage, the owner has the choice of altering the tank to allow sufficient drainage of oil to pass the inspections or selecting the SBT alternative in lieu of the COW system as allowed under proposed § 157.10a(a).

Two commenters recommended the deletion of the proposed requirement to water wash cargo piping that is used for ballasting cargo tanks because paragraph 4.5.1 of Resolution 15 does not require water washing of the cargo piping. The Coast Guard concurs that paragraph 4.5.1 does not require water washing of cargo piping but, paragraph 7.4(vii) of Resolution 15 does require water washing of certain cargo piping. The proposed regulations that concerned the commenters consolidated the two requirements of Resolution 15.

Two commenters pointed out that the requirement in Resolution 15 to water wash cargo piping did not include washing the cargo piping before ballasting departure ballast tanks, while the proposed regulations did invoke such a requirement. The Coast Guard agrees that there is a discrepancy and has omitted the requirement in § 157.155(b)(2) to water wash cargo piping before ballasting departure ballast tanks.

One commenter recommended that the proposed personnel requirements for crude oil washing be consolidated with the Tankerman requirements. This action is currently being considered by the Coast Guard and would be the subject of a future rulemaking. Until that time, the personnel requirements for crude oil washing will remain with the COW system requirements in 33 CFR Part 157.

Two commenters disagreed with the requirement that the person in charge of COW operations must have one year's experience on a tank vessel prior to becoming the person in charge. One year's experience on a tank vessel prior to becoming the person in charge of COW operations is expressly required in Resolution 15. The effective operation of a COW system is extremely dependent on the operator; therefore, the experience requirements for the



person in charge of COW operations are most essential. In fact, two other commenters pointed out that the proposed regulations did not reflect correctly the standard in Resolution 15 which requires the person in charge of COW operations to have one year's experience on tankers with duties that included the discharge of cargo, in addition to completing an approved training program in crude oil washing cargo tanks. The proposal did not require the one year's experience in addition to completing a Coast Guard approved training program. The Coast Guard concurs with this second comment and has rewritten § 157.152(c) to agree with Resolution 15, requiring the person in charge of COW operations to have one year's experience on tankers prior to becoming the person in charge.

One commenter did not agree with the proposed requirement that the person in charge of COW operations must participate in crude oil washing aboard a "special" tank vessel prior to becoming the person in charge. In the commenter's opinion, COW operations are basically the same on all tank vessels and the qualifications should be based only on training and experience. As discussed above, the responsibilities of the person in charge are most essential during COW operations in assuring the effective operation of the system. The proposal for the person in charge to participate in the crude oil washing of cargo tanks on the same or similar tank vessel to which the person will be assigned as the person in charge is considered necessary by the Coast Guard so that person gains the experience of the actual equipment and procedures for that particular tank vessel. In view of this, the regulation remains as proposed.

Four commenters recommended that the Coast Guard accept a COW training program approved by an administration other than the United States. The Coast Guard concurs with the comment and has rewritten § 157.152(c)(2) to include the acceptance of a COW training program approved by the government of the tank vessel's flag state.

One commenter pointed out that the one year's experience for the person in charge of COW operations and the six month's experience for the crew members that have a responsibility in crude oil washing should be in oil discharge operations as required by Resolution 15 and not crude oil discharge operations as required by the regulations. The Coast Guard agrees with this comment and has rewritten

§ 157.152(c) and § 157.154(a) to reflect this minor editorial change.

Three commenters objected to the proposed requirement that every crew member who participates in COW operations must have six month's experience on a tank vessel. The commenters correctly state that this proposed requirement is not consistent with the standards in Resolution 15 which requires "where other nominated persons are intended to have particular responsibilities \* \* \* they shall have at least 6 month's experience". The duties of an ordinary seaman and some of those of an able bodied seaman during COW operations do not justify the need for six month's experience on a tank vessel. The Coast Guard concurs with this comment and has rewritten § 157.154 to require that only the crew members with a designated responsibility during COW operations need to have six months' experience on a tank vessel.

One commenter asked how the master will verify that the personnel participating in COW operations comply with the personnel requirements of these regulations. The Coast Guard does not intend to issue documentation certifying compliance with the personnel requirements of these regulations. The responsibility to be able to verify compliance with § 157.152 and § 157.154 will rest with the tanker industry.

Two commenters pointed out that allowing ballast only in cargo tanks that have been crude oil washed during the most recent discharge of crude oil from those tanks does not permit ballasting of cargo tanks which were crude oil washed en route on a two point discharge. The Coast Guard concurs with this comment and has corrected § 157.160(a) and (b) to allow the ballasting of cargo tanks that have been crude oil washed during or after the most recent discharge of crude oil from those tanks.

One commenter was of the opinion that crude oil washing for sludge control purposes should not be within the "purview" of the Coast Guard. Pollution from sludge removal is one of the forms of oil pollution these regulations are expected to reduce. By implementing regulations which will reduce the amount of sludge build-up in tank vessels, the amount of oil pollution that could result from removal of that sludge is expected to be reduced. The Coast Guard does not concur with this comment; therefore, the regulations for the crude oil washing of cargo tanks for the purpose of sludge control remain as proposed.

Two commenters were of the opinion that the proposed regulations for sludge

control which required crude oil washing of at least 25 percent of the cargo tanks not used for carrying ballast to be crude oil washed before each ballast voyage and which required that each cargo tank is crude oil washed at least once in every four times crude oil is discharged from the tank, were not consistent with Resolution 15. The Coast Guard disagrees. Resolution 15 requires approximately one-quarter of all the remaining tanks (of those not crude oil washed for ballast) to be crude oil washed for sludge control before departure on a ballast voyage. The proposed requirement for each tank to be crude oil washed at least once in every four times crude oil is discharged from the tank was added to make sure that the same 25 percent of the tanks were not crude oil washed every time, but rather all the tanks are crude oil washed on a rotational basis. This requirement assures that every tank will be crude oil washed at least once in every four voyages. The third requirement under § 157.160(a)(2) and (b)(3) that no tank need be crude oil washed more than once during each 120 day period eliminates unnecessary and excessive crude oil washing of the cargo tanks.

Two commenters pointed out that the proposed regulation which requires all cargo tanks that are to be used for ballasting and which have been crude oil washed at sea to be ballasted prior to leaving the discharge port, would force the tank vessel to sail at its deepest ballast draft if all the tanks were crude oil washed at sea. The Coast Guard concurs with this comment and has rewritten § 157.162 to only require those tanks which have been crude oil washed at sea and which will be used as ballast tanks when leaving the port to be ballasted for possible inspection by the Coast Guard. The inspection criterion of § 157.140(a)(2) which is referenced in § 157.162 is intended as an inspection criterion for the inspector and is not required as a routine operation.

Three commenters were of the opinion that the proposed regulations requiring a continuous supply of inert gas to the cargo tanks is unnecessary for safe operation of the COW system as long as the criteria for 8% or less oxygen content and positive pressure are maintained in the tank. The Coast Guard concurs with this comment and has rewritten § 157.164(a)(4) to reflect this intent.

Three commenters recommended deleting the proposed requirement that a crew member monitor the inert gas instrumentation during the COW operations, if the instrumentation has an appropriate alarm. The Coast Guard



concurs with this comment and has rewritten § 157.164(a)(5) to require that a crew member monitor the inert gas instrumentation during COW operations, except if the instrumentation has an alarm that sounds in the cargo control room when the oxygen content being monitored exceeds 8% by volume.

Two commenters were of the opinion that one location in each tank for measuring the oxygen content in that tank would be sufficient and that two locations, as required by the proposed regulations and Resolution 15, are redundant and unnecessary. The Coast Guard agrees with IMCO that in view of the increased risk of explosion in a cargo tank that is not properly inerted during crude oil washing of that tank, oxygen content measurements should be taken at two locations in each cargo tank. By taking measurements one meter from the deck and in the center of the hullage space, the operator is better assured that each tank is properly inerted. In view of this, the Coast Guard does not concur with this comment and the regulation remains as proposed.

One commenter felt there was a discrepancy between the oxygen content level of the inert gas required in the proposal and that required in 46 CFR 32.53. The commenter noted that the proposal required an inert gas with 8 percent or less oxygen content, while 46 CFR 32.53 requires 5 percent or less oxygen content. The commenter recommended retaining the 8 percent or less requirement. There is no discrepancy. The 5 percent or less oxygen content required in 46 CFR 32.53 is a design requirement for the inert gas system. The 8 percent or less oxygen content required in the proposal is a less stringent operating requirement that must be complied with during COW operations. In view of this, the 5 percent or less oxygen content is retained as a design requirement for the inert gas system and the 8 percent or less oxygen content is retained as an operating requirement during COW operations.

Seven commenters recommended that the proposed regulations allow use of an alternative to the simultaneous ballasting and discharge of cargo to prevent hydrocarbon vapor emissions from cargo tanks when ballasting. The Coast Guard concurs with this comment and has rewritten § 157.132 to allow the use of an alternative means accepted by the Commandant to prevent hydrocarbon vapor emissions when ballasting cargo tanks on tank vessels having a COW system and that need to ballast cargo tanks when leaving a U.S. port.

Two commenters stated that the proposed requirement for simultaneous

ballasting and discharging of cargo is in conflict with another requirement in the proposal which prohibits ballasting tanks while loading or discharging cargo. The proposed regulation for simultaneous ballasting and discharge of cargo is a requirement for tank vessels having a COW system. The proposed regulation which prohibits the ballasting of tanks while loading or discharging cargo was a requirement for tank vessels having CBT and has been deleted from the proposal as previously discussed under Division II. In view of this, there is no conflict in the proposal regarding this issue.

One commenter stated that it was not clear how the proposed regulation regarding the prevention of hydrocarbon vapor emissions will affect emissions in or near U.S. ports. The effect of the proposed regulations on hydrocarbon vapor emissions in or near U.S. ports is discussed in detail in Chapter 3 of the Final Regulatory Analysis and Environmental Impact Statement.

One commenter asked how the regulations for the prevention of hydrocarbon vapor emissions are to be enforced. The Coast Guard will enforce the equipment requirement under § 157.132 and all safety related requirements regarding this equipment and any other equipment on the tank vessel which affects hydrocarbon vapor emissions. The Coast Guard will also enforce the operating requirement under § 157.166 to ensure that the means to prevent hydrocarbon vapor emissions are properly used. However, this requirement will only be enforced in a U.S. port which is in an area designated by the EPA in 40 CFR Part 81 as an area that exceeds the national primary ambient air quality ozone standard in 40 CFR Part 50. The EPA is the federal agency responsible for issuing air pollution standards; therefore, the Coast Guard is not responsible for determining in which U.S. ports the operating requirement in § 157.166 will be enforced. Almost every major U.S. port is located in an area designated in 40 CFR Part 81 as an area that exceeds the allowable standard for ozone. A note has been added after § 157.166 informing the reader that questions regarding which ports are located in the areas designated in 40 CFR Part 81 can be answered by contacting the Plans Analysis Section of EPA.

One commenter stated that the standard in Resolution 15 for a means to prevent hydrocarbon vapor emissions only applies where local conditions require it and should not be invoked throughout the United States as required in the proposal. The proposal did not

invoke the requirement throughout the United States. As discussed above, the requirement is to be enforced in each U.S. port that is in an area designated in 40 CFR Part 81 as an area that exceeds the national primary ambient air quality ozone standard. EPA is responsible for determining in which U.S. ports the operating requirement under § 157.166 will be enforced.

One commenter recommended holding in abeyance the proposed requirements for the prevention of hydrocarbon vapor emissions until various studies which are underway are completed to determine the effectiveness and safety of vapor control. While it is agreed that studies are being conducted to advance the technology of vapor control, IMCO and the Coast Guard agree that the simultaneous ballasting and discharging of cargo tanks is an accepted state of the art method of preventing hydrocarbon vapor emissions when done correctly. In addition, other commenters are of the opinion that alternative methods are available for vapor control as evidenced by the seven commenters who recommended the regulations allow for the use of alternative methods of preventing hydrocarbon vapor emissions. In view of this information the regulations for the prevention of hydrocarbon vapor emissions will not be held in abeyance.

One commenter pointed out that there was a conflict between the proposed requirement for simultaneous ballasting and discharging of cargo and the proposed regulation of 33 CFR 156.120(i) (42 FR 36282) which requires overboard discharge and suction valves connected to the oil transfer system to be sealed or lashed closed when conducting oil transfer operations. The Coast Guard concurs with this comment and will modify 33 CFR 156.120(i) when it is issued as a final regulation to eliminate the conflict of requirements.

One commenter recommended that all references to the Coast Guard approved *Crude Oil Washing Operations and Equipment Manual* should be modified to read "Coast Guard or flag Administration approved COW manual". As stated in the proposal, the Coast Guard will accept a manual which is approved by the government of the vessel's flag state. All references to a manual approved by the government of the vessel's flag state are made at the appropriate locations in the regulations. A manual approved by the government of the tank vessel's flag state must conform to the manual standards of Resolution 15.

One commenter was of the opinion that the standard in Resolution 15 which



requires COW operations "to accord with all foreseeable circumstances of cargo discharge restraints" is utterly impossible to determine and would be uneconomical to even attempt to accomplish. The Coast Guard concurs with this statement and for that reason did not include such a regulation in the proposal or in this document.

One commenter pointed out that design characteristics will vary with different crude oils and advised that the Coast Guard inspectors be made aware of the tolerances on the characteristics that are recorded in the COW manual. The characteristics recorded in the COW manual when passing the Coast Guard inspections are the minimum characteristics to be used during COW operations thereafter. These are the characteristics the inspector will verify when making spot checks of the COW system. The operator must make sure that the COW system is not operated unless the characteristics recorded in the COW manual under § 157.150 when passing the Coast Guard inspections are met.

One commenter recommended a close appraisal of the proposed regulations with regard to the requirements in the COW manual and COW operating requirements "so all that is necessary is included without overkill and possible confusion". The Coast Guard has reviewed all of these regulations and is of the opinion that they are a complete set of requirements which reflect all the requirements of the IMCO standards without overkill or confusion.

One commenter asked if the Coast Guard will publish a list of crude oils that are not suitable for COW operations. Another commenter was of the opinion that it may be impossible to produce a list of crude oils which cannot be used in COW operations. The Coast Guard does not have a list of crude oils that are not suitable for COW operations. Development of a meaningful list is dependent upon the experience gained by the tank vessel operators. That experience is being developed and reported to IMCO. When information regarding crude oils not suitable for COW operations becomes available, the tanker industry will be informed.

One commenter pointed out that some ports in the United States have berths which restrict tank vessels from operating COW systems while moored at the dock. The commenter suggested that a provision be added to the regulations to address this situation. The number of terminals which allow COW operation will increase as the practice of crude oil washing becomes more commonplace. To preclude the

possibility of violating certain operating requirements of these regulations, owners, operators, and masters should remain aware of those terminals which may continue to prohibit COW operations. In view of the fact that certain COW operating procedures must be followed while discharging crude oil, an additional provision is not necessary to address this situation.

One commenter asked if an owner decides to install a COW system on board a tank vessel that has SBT in compliance with § 157.10a(1), must the COW system be in compliance with proposed Subpart D. If a COW system is installed on a tank vessel under § 157.10a that has SBT in compliance with § 157.10a(1), that COW system does not have to be in compliance with proposed Subpart D. However, the COW system will be treated as a cargo piping system and must meet all the applicable design, installation, and safety requirements for a cargo piping system. In addition, an inert gas system that meets 46 CFR 32.53 is required on all tank vessels with a COW system.

#### Environmental Impact Summary

The purpose of these regulations is to reduce operational and accidental oil pollution and to improve the safety of tank vessels. The Coast Guard estimates that these new standards will result in a reduction of approximately 49,000 metric tons/year in operational oil outflows from present levels. There is estimated to be a reduction of 46,600 metric tons/year in crude oil outflows and a reduction of 2,400 metric tons/year in product outflows. While it is impossible to estimate the reduction in the average 8,000 metric tons/year that result from collisions, ramblings, and groundings of tank vessels in our coastal water, it is felt that a significant reduction will occur with the implementation of these regulations.

The environmental impact of this amendment is discussed in further detail in the Final Regulatory Analysis and Environmental Impact Statement prepared as a part of this rulemaking.

#### Economic Impact Summary

The Coast Guard estimates that this amendment will affect between 589 and 655 existing foreign crude oil carriers and between 138 and 156 foreign product carriers, depending on the options chosen by the shipowners. Approximately 90 existing U.S. crude oil carriers and product carriers would be affected.

Depending on the options chosen by the shipowners, the projected initial capital cost for SBT, COW and/or CBT,

on all existing U.S. tank vessels and foreign tank vessels which call at U.S. ports is estimated to be between \$400 and \$770 million. The total outlay which will be passed on to the consumer as a result of higher freight rates is estimated to be between \$930 million and \$2.5 billion at an expected annual cost between \$90 and \$175 million each subsequent year until 1985. The cost of these measures on a per ship basis is between \$0 and \$2 million for a product carrier and between \$0.5 and \$8 million for a crude oil carrier, depending on the option chosen and the size of the tank vessel. Some of these cost figures have increased from those figures published in the proposal. These increases are a result of including operating costs for additional tankers to compensate for the lost cargo capacity when the SBT and CBT options are chosen by the shipowner and the higher costs of ship construction in the United States.

Because of the current worldwide tanker surplus and the expected increase in domestic pipeline transportation of oil, very few new tankers are expected to be constructed between now and 1985. Tanker construction beyond 1985 is unknown at this time. For these reasons, the cost for new tank vessel construction has not been included in the above cost figures.

The economic impact of this amendment is discussed in further detail in the Final Regulatory and Environmental Impact Statement prepared as a part of this rulemaking.

This rule has been reviewed under the Department of Transportation's "Policies and Procedures for Simplification, Analysis, and Review of Regulations" (43 FR 9582, March 8, 1978). A final evaluation of the rule has been prepared and has been included in the public docket.

In consideration of the foregoing, the proposed rules published in the February 12, 1979 issue of the Federal Register (44 FR 8984) are hereby adopted with the changes described above and set forth below.

Subchapter O of Chapter I of Title 33, Code of Federal Regulations is amended as follows:

#### PART 157—RULES FOR THE PROTECTION OF THE MARINE ENVIRONMENT RELATING TO TANK VESSELS CARRYING OIL IN BULK

1. By revising § 157.01 to read as follows:

##### § 157.01 Applicability.

(a) This part applies to each tank vessel of 150 gross tons or more, unless



otherwise indicated, that carries crude oil or products in bulk and that is—

(1) Documented under the laws of the United States (U.S. vessel); or

(2) A foreign vessel that—

(i) Transfers cargo at a port or place subject to the jurisdiction of the United States; or

(ii) Otherwise enters or operates in the navigable waters of the United States.

(b) This part does not apply to the following:

(1) Vessels under Subsections (4) and (5) of Sec. 5, Port and Tanker Safety Act of 1978 (Pub. L. 95-474, 92 Stat. 1480, 46 U.S.C. 391a).

(2) Any foreign vessel not destined for, or departing from, a port or place subject to the jurisdiction of the United States that is in innocent passage through the territorial seas of the United States or in transit through navigable waters of the United States which form a part of an international strait.

2. By amending § 157.03 by revising paragraphs (k), (n), and (v) and by adding paragraphs (bb), (cc), (dd), (ee), (ff), (gg), and (hh) to read as follows:

#### § 157.03 Definitions.

(k) "Major conversion" means a conversion of an existing vessel that—

(1) Substantially alters the dimensions or carrying capacity of the vessel, except the installation of only segregated ballast tanks, dedicated clean ballast tanks, or a crude oil washing system to meet this part;

(2) Changes the type of vessel; or

(3) Substantially prolongs the vessel's service life.

(n) "Oil" includes oil of any kind or in any form, including, but not limited to, petroleum, fuel oil, sludge, oil refuse, and oil mixed with wastes other than dredged spoil.

(v) "Tank vessel" means a vessel that is constructed or converted to carry liquid bulk oil cargoes in tanks and includes tankers, tankships, tank barges, integrated tug barges, and combination carriers when carrying oil cargoes in bulk.

(bb) "Crude oil" means any liquid hydrocarbon mixture occurring naturally in the earth, whether or not treated to render it suitable for transportation, and includes crude oil from which certain distillate fractions may have been removed, and crude oil to which certain distillate fractions may have been added.

(cc) "Product" means any liquid hydrocarbon mixture in any form, except crude oil, petrochemicals, and liquefied gases.

(dd) "Dedicated clean ballast tank" means a cargo tank that is allocated solely for the carriage of clean ballast.

(ee) "Integrated tug barge" means a tug and a tank barge with a mechanical system that allows the connection of the propulsion unit (the tug) to the stern of the cargo carrying unit (the tank barge) so that the two vessels function as a single self-propelled vessel.

(ff) "Ballast voyage" means the voyage that a tank vessel engages in after it leaves the port of final cargo discharge.

(gg) "Large primary structural member" includes any of the following:

(1) Web frames.

(2) Girders.

(3) Webs.

(4) Main brackets.

(5) Transverses.

(6) Stringers.

(7) Struts in transverse web frames when there are 3 or more struts and the depth of each is more than  $\frac{1}{4}$ s of the total depth of the tank.

(hh) "MARPOL Protocol" means the *Protocol of 1978 Relating to the International Convention for the Prevention of Pollution from Ships, 1973*, done at London on February 17, 1978.

3. By adding a new § 157.06 to read as follows:

#### § 157.06 Appeals.

(a) Any person directly affected by an action taken under this part may request reconsideration by the Coast Guard official who is responsible for that action.

(b) Any person not satisfied with a ruling made under the procedure contained in paragraph (a) of this section may appeal that ruling in writing, except as allowed under paragraph (e) of this section, to the Coast Guard District Commander of the district in which the action was taken.

The appeal may contain supporting documentation and evidence that the appellant wishes to have considered. If requested, the District Commander may stay the effect of the action being appealed while the ruling is being reviewed. The District Commander issues a ruling after reviewing the appeal submitted under this paragraph.

(c) Any person not satisfied with a ruling made under the procedure contained in paragraph (b) of this section may appeal that ruling in writing, except as allowed under paragraph (e) of this section, to the Chief, Office of Merchant Marine Safety, U.S. Coast Guard, Washington, D.C.

20593. The appeal may contain supporting documentation and evidence that the appellant wishes to have considered. If requested, the Chief, Office of Merchant Marine Safety may stay the effect of the action being appealed while the ruling is being reviewed. The Chief, Office of Merchant Marine Safety issues a ruling after reviewing the appeal submitted under this paragraph.

(d) Any decision made by the Chief, Office of Merchant Marine Safety under the procedure contained in paragraph (c) of this section is final agency action.

(e) If the delay in presenting a written appeal would have a significant adverse impact on the appellant, the appeal under paragraph (b) or (c) of this section may initially be presented orally. If an initial presentation of the appeal is made orally, the appellant must submit the appeal in writing within five days of the oral presentation to the Coast Guard official to whom the oral presentation was made. The written appeal must contain, at a minimum, the basis for the appeal and a summary of the material presented orally.

4. By revising the title of Subpart B to read as follows:

#### Subpart B—Design, Equipment, and Installation

5. By adding § 157.08 (f) and (g) to read as follows:

#### § 157.08 Applicability of Subpart B.

(f) Sections 157.09 and 157.10a do not apply to a new vessel that—

(1) Is constructed under a building contract awarded after June 1, 1979;

(2) In the absence of a building contract, has the keel laid or is at a similar stage of construction after January 1, 1980;

(3) Is delivered after June 1, 1982; or

(4) Has undergone a major conversion for which—

(i) The contract is awarded after June 1, 1979;

(ii) In the absence of a contract, conversion is begun after January 1, 1980; or

(iii) Conversion is completed after June 1, 1982.

(g) Sections 157.09(b)(3), 157.10(c)(3), and 157.10a(d)(3) do not apply to tank barges.

6. By adding new § 157.10 and § 157.10a to read as follows:

#### § 157.10 Protective location of segregated ballast tanks and crude oil washing systems for certain new vessels.

(a) This section applies to a new vessel that—



(1) Is constructed under a building contract awarded after June 1, 1979;

(2) In the absence of a building contract, has the keel laid or is at a similar stage of construction after January 1, 1980;

(3) Is delivered after June 1, 1982; or

(4) Has undergone a major conversion for which—

(i) The contract is awarded after June 1, 1979;

(ii) In the absence of a contract, conversion is begun after January 1, 1980; or

(iii) Conversion is completed after June 1, 1982.

(b) Each tank vessel under this section of 20,000 DWT or more that carries crude oil and of 30,000 DWT or more that carries products must have segregated ballast tanks that have a total capacity to allow the vessel to meet the draft and trim requirements in paragraph (c) of this section without recourse to the use of cargo tanks for water ballast.

(c) In any ballast condition during any part of a voyage, including that of lightweight with only segregated ballast, each tank vessel under paragraph (b) of this section must have the capability of meeting each of the following:

(1) The molded draft amidship (dm) in meters, without taking into account vessel deformation, must not be less than dm in the following mathematical relationship:

$$dm = 2.0 + 0.02L$$

(2) The drafts at the forward and after perpendiculars must correspond to those determined by the draft amidship under paragraph (c)(1) of this section, in association with a trim by the stern of no more than 0.015L.

(3) The minimum draft at the after perpendicular is that which is necessary to obtain full immersion of the propeller.

(d) Segregated ballast tanks under paragraph (b) of this section, voids, and other spaces that do not carry cargo which are within the cargo tank length must be distributed as determined under the procedure contained in Appendix C of this part.

(e) Each tank vessel under this section of 20,000 DWT or more that carries crude oil must have a crude oil washing system that meets the design, equipment, and installation requirements in Subpart D of this part.

(f) Each tank vessel under this section may be designed to carry ballast water in cargo tanks as allowed under § 157.35.

**§ 157.10a Segregated ballast tanks, crude oil washing systems, and dedicated clean ballast tanks for certain new and existing vessels.**

(a) Not later than June 1, 1981, except as allowed in paragraph (b) of this section, an existing vessel of 40,000 DWT or more that carries crude oil and a new vessel of 40,000 DWT or more but less than 70,000 DWT that carries crude oil must have—

(1) Segregated ballast tanks with a total capacity to meet the draft and trim requirements in paragraph (d) of this section; or

(2) A crude oil washing system that meets the design, equipment, and installation requirements of Subpart D of this part.

(b) Each tank vessel under paragraph (a) of this section does not have to meet the requirements of paragraph (a) of this section until June 1, 1983, for an existing vessel of 70,000 DWT or more, or until June 1, 1985, for a new or existing vessel of 40,000 DWT or more but less than 70,000 DWT, if the vessel—

(1) Has dedicated clean ballast tanks with the total capacity to meet the draft and trim requirements under paragraph (d) of this section; and

(2) Meets the design and equipment requirements under Subpart E of this part.

(c) Not later than June 1, 1981, an existing vessel of 40,000 DWT or more that carries products and a new vessel of 40,000 DWT or more but less than 70,000 DWT that carries products must have—

(1) Segregated ballast tanks with a total capacity to meet the draft and trim requirements in paragraph (d) of this section; or

(2) Dedicated clean ballast tanks that have a total capacity to meet the draft and trim requirements in paragraph (d) of this section and that meet the design and equipment requirements under Subpart E of this part.

(d) In any ballast condition during any part of a voyage, including that of lightweight with either segregated ballast in segregated ballast tanks or clean ballast in dedicated clean ballast tanks, each tank vessel under paragraph (a)(1), (b), or (c) of this section must have the capability of meeting each of the following without recourse to the use of cargo tanks for water ballast:

(1) The molded draft amidship (dm) in meters, without taking into account vessel deformation, must not be less than dm in the following mathematical relationship:

$$dm = 2.0 + 0.02L$$

(2) The drafts at the forward and after perpendiculars must correspond to those

determined by the draft amidship under paragraph (d)(1) of this section, in association with a trim by the stern of no more than 0.015L.

(3) The minimum draft at the after perpendicular is that which is necessary to obtain full immersion of the propeller.

(e) Each tank vessel that meets paragraph (a)(1), (b), or (c) of this section may be designed to carry ballast water in cargo tanks as allowed under § 157.35.

**Note.**—Segregated ballast tanks located in wing tanks provide protection against oil outflow in the event of a collision, ramming, or grounding.

7. By adding § 157.11 (d), (e), and (f) to read as follows:

**§ 157.11 Pumping, piping, and discharge arrangements.**

\* \* \* \* \*

(d) Each tank vessel under § 157.09 and § 157.10a must have—

(1) Equipment that drains each cargo pump and oil piping line of oil residue;

(2) Oil piping lines for the draining of oil residue from cargo pumps and other oil piping lines to a cargo tank or a slop tank; and

(3) An oil piping line that meets paragraph (f) of this section and is connected to the cargo discharge piping on the outboard side of the manifold valves for the draining of oil residue from cargo pumps and other oil piping lines to a receptacle on the shore.

(e) Each tank vessel under § 157.10 must have—

(1) Oil piping lines that are designed and installed to minimize oil retention in those lines;

(2) Equipment that drains each cargo pump and oil piping line of oil residue;

(3) Oil piping lines for the draining of oil residue from cargo pumps and other oil piping lines to a cargo tank or slop tank; and

(4) An oil piping line that meets paragraph (f) of this section and is connected to the cargo discharge piping on the outboard side of the manifold valves for the draining of oil residue from cargo pumps and other oil piping lines to a receptacle on the shore.

(f) Each oil piping line under paragraph (d)(3) or (e)(4) of this section must have a cross-sectional area of 10 percent or less of the cross-sectional area of the main cargo discharge piping line, except if the oil piping line under paragraph (d)(3) of this section is installed before January 1, 1980, that piping line may have a cross-sectional area of 25 percent or less of the cross-sectional area of the main cargo discharge piping line.

8. By revising § 157.15(b)(1) to read as follows:



**§ 157.15 Slop tanks in tank vessels.**

(b) \* \* \*

(1) Segregated ballast tanks that meet the requirements in § 157.09, § 157.10, or § 157.10a; or

9. By revising § 157.24(c) to read as follows:

**§ 157.24 Submission of calculations, plans, and specifications.**

(c) Calculations to substantiate compliance with the segregated ballast capacity and distribution requirements in § 157.09, § 157.10, or § 157.10a or a letter from the government of the vessel's flag state certifying that the vessel complies with the segregated ballast capacity and distribution requirements in—

(1) Section 157.09, § 157.10, or § 157.10a; or

(2) Regulation 13 and 13E of the MARPOL Protocol.

10. By adding a new § 157.26 to read as follows:

**§ 157.26 Operation of a tank vessel in violation of regulations.**

No person may cause or authorize the operation of a tank vessel in violation of the regulations in this part.

11. By revising § 157.35 to read as follows:

**§ 157.35 Ballast added to cargo tanks.**

The master of a tank vessel that meets § 157.09, § 157.10, § 157.10a(a)(1), § 157.10a(b), or § 157.10a(c) shall ensure that ballast water is carried in a cargo tank only if—

(a) The vessel encounters abnormally severe weather conditions;

(b) More ballast water than can be carried in segregated ballast tanks or dedicated clean ballast tanks is necessary for the safety of the vessel;

(c) The ballast water is processed and discharged in compliance with § 157.37; and

(d) On a new vessel under § 157.10 that carries crude oil, the ballast water is only carried in a cargo tank that is crude oil washed in accordance with Subpart D of this part during or after the most recent discharge of crude oil from that tank.

12. By amending Part 157 by adding Subparts D and E and appendices C and D to read as follows:

**Subpart D—Crude Oil Washing (COW) System on Tank Vessels****General****Sec.**

- 157.100 Plans for U.S. tank vessels: Submission.
- 157.102 Plans for foreign tank vessels: Submission.
- 157.104 Scale models.
- 157.106 Letter of acceptance.
- 157.108 *Crude Oil Washing Operations and Equipment Manual* for U.S. tank vessels: Submission.
- 157.110 *Crude Oil Washing Operations and Equipment Manual* for foreign tank vessels: Submission.
- 157.112 *Approved Crude Oil Washing Operations and Equipment Manual*.
- 157.114 *Crude Oil Washing Operations and Equipment Manual*: Not approved.
- 157.116 Required documents: U.S. tank vessels.
- 157.118 Required documents: Foreign tank vessels.
- 157.120 Waiver of required documents.

**Design, Equipment, and Installation**

- 157.122 Piping, valves, and fittings.
- 157.124 COW tank washing machines.
- 157.126 Pumps.
- 157.128 Stripping system.
- 157.130 Crude oil washing with more than one grade of crude oil.
- 157.132 Cargo tanks: Hydrocarbon vapor emissions.
- 157.134 Cargo tank drainage.
- 157.136 Two-way voice communications.
- 157.138 *Crude Oil Washing Operations and Equipment Manual*.

**Inspections**

- 157.140 Tank vessel inspections.
- 157.142 Letter of acceptance: Inspections.
- 157.144 Tank vessels of the same class: Inspections.
- 157.146 Similar tank design: Inspections on U.S. tank vessels.
- 157.147 Similar tank design: Inspections on foreign tank vessels.
- 157.148 COW system: Evidence for inspections.
- 157.150 *Crude Oil Washing Operations and Equipment Manual*: Recording information after inspections.

**Personnel**

- 157.152 Person in charge of COW operations.
- 157.154 Assistant personnel.

**COW Operations**

- 157.155 COW operations: General.
- 157.156 COW operations: Meeting manual requirements.
- 157.158 COW operations: Changed characteristics.
- 157.160 Tanks: Ballasting and crude oil washing.
- 157.162 Crude oil washing during a voyage.
- 157.164 Use of inert gas system.
- 157.166 Hydrocarbon vapor emissions.
- 157.168 Crew member: Main deck watch.
- 157.170 COW equipment: Removal.
- 157.172 Limitations on grades of crude oil carried.

**Subpart E—Dedicated Clean Ballast Tanks on Tank Vessels.****General****Sec.**

- 157.200 Plans for U.S. tank vessels: Submission.
- 157.202 Plans and documents for foreign tank vessels: Submission.
- 157.204 Letter of acceptance.
- 157.206 *Dedicated Clean Ballast Tanks Operations Manual* for U.S. tank vessels: Submission.
- 157.208 *Dedicated Clean Ballast Tanks Operations Manual* for foreign tank vessels: Submission.
- 157.210 *Approved Dedicated Clean Ballast Tanks Operations Manual*.
- 157.212 *Dedicated Clean Ballast Tanks Operations Manual*: Not approved.
- 157.214 Required documents: U.S. tank vessels.
- 157.216 Required documents: Foreign tank vessels.
- 157.218 Dedicated clean ballast tanks: Alterations.

**Design and Equipment**

- 157.220 Dedicated clean ballast tanks: Standards.
- 157.222 Pump and piping arrangements.
- 157.224 *Dedicated Clean Ballast Tanks Operations Manual*.

**Dedicated Clean Ballast Tanks Operations**

- 157.225 Dedicated clean ballast tanks operations: General.
- 157.226 *Dedicated Clean Ballast Tanks Operations Manual*: Procedures to be followed.
- 157.228 Isolating valves: Closed during a voyage.

**Appendix C—Procedure for Determining Distribution of Segregated Ballast Tanks To Provide Protection Against Oil Outflow in the Event of Grounding, Ramming, or Collision**

**Appendix D—Example of a Procedure for Dedicated Clean Ballast Tanks Operations**

**Subpart D—Crude Oil Washing (COW) System on Tank Vessels**

**Authority:** Sec. 5, Port and Tanker Safety Act of 1978, 92 Stat. 1480 (46 U.S.C. 391a); 49 CFR 1.46(n)(4).

**General****§ 157.100 Plans for U. S. tank vessels: Submission.**

(a) Before each U. S. tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) is inspected under § 157.140, the owner or operator of that vessel must submit to the Coast Guard plans that include—

- (1) A drawing or diagram of the COW pumping and piping system that meets 46 CFR 56.01-10(d);
- (2) The design of each COW machine;
- (3) The arrangement, location, and installation of the COW machines; and
- (4) Except as allowed in § 157.104, the projected direct impingement pattern of



crude oil from the nozzles of the COW machines on the surfaces of each tank, showing the surface areas not reached by direct impingement.

(b) Plans under paragraph (a) of this section must be submitted to the Officer in Charge, Marine Inspection, of the zone in which the COW system is installed or to one of the following Coast Guard field technical offices:

(1) Commander, 3rd Coast Guard District (mmt), Governors Island, New York, N. Y. 10004, if the COW system is installed in the area under the 1st or 3rd Coast Guard Districts.

(2) Commander, 5th Coast Guard District (mmt), 431 Crawford Street, Portsmouth, Virginia 23705, if the COW system is installed in the area under the 5th or 7th Coast Guard Districts.

(3) Commander, 8th Coast Guard District (mmt), 500 Camp Street, Hale Boggs Federal Building, New Orleans, Louisiana 70130, if the COW system is installed in the area under the 2nd or 8th Coast Guard Districts.

(4) Commander, 9th Coast Guard District (mmt), 601 Rockwell Ave., Cleveland, Ohio 44114, if the COW system is installed in the area under the 9th Coast Guard District.

(5) Commander, 12th Coast Guard District (mmt), 630 Sansome Street, San Francisco, California 94126, if the COW system is installed in the area under the 11th, 12th, 13th, 14th, or 17th Coast Guard Districts.

#### **§ 157.102 Plans for foreign tank vessels: Submission.**

If the owner or operator of a foreign tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) desires the letter from the Coast Guard under § 157.106 accepting the plans submitted under this paragraph, the owner or operator must submit to the Commandant (G-MMT), U. S. Coast Guard, Washington, D. C. 20593, plans that include—

(a) A drawing or diagram of the COW pumping and piping system that meets 46 CFR 56.01-10(d);

(b) The design of each COW machine;

(c) The arrangement, location, and installation of the COW machines; and

(d) Except as allowed in § 157.104, the projected direct impingement pattern of crude oil from the nozzles of the COW machines on the surfaces of each tank, showing the surface areas not reached by direct impingement.

#### **§ 157.104 Scale models.**

If the pattern under § 157.100(a)(4) or § 157.102(d) cannot be shown on a plan, a scale model of each tank must be built for Coast Guard inspection to simulate, by a pinpoint of light, the projected

direct impingement pattern on the surfaces of the tank.

#### **§ 157.106 Letter of acceptance.**

The Coast Guard informs the submitter by letter that the plans submitted under § 157.100 or § 157.102 are accepted if—

(a) The plans submitted show that the COW system meets this subpart; or

(b) The plans submitted and the scale model under § 157.104 show that the COW system meets this subpart.

#### **§ 157.108 Crude Oil Washing Operations and Equipment Manual for U.S. tank vessels: Submission.**

Before each U.S. tank vessel under § 157.10(e) or having a COW system under § 157.10(a)(2) is inspected under § 157.140, the owner or operator of that vessel must submit two copies of a *Crude Oil Washing Operations and Equipment Manual* that meets § 157.138 to the Officer in Charge, Marine Inspection, of the zone in which the COW system is installed or to the appropriate Coast Guard field technical office listed in § 157.100(b).

#### **§ 157.110 Crude Oil Washing Operations and Equipment Manual for foreign tank vessels: Submission.**

If the owner or operator of a foreign tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) desires a Coast Guard approved *Crude Oil Washing Operations and Equipment Manual* under § 157.112, the owner or operator must submit two copies of a manual that meets § 157.138 to the Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593.

#### **§ 157.112 Approved Crude Oil Washing Operations and Equipment Manual.**

If the manuals submitted under § 157.108 or § 157.110 meet § 157.138, the Coast Guard approves the manuals and forwards one of the approved manuals to the submitter.

#### **§ 157.114 Crude Oil Washing Operations and Equipment Manual: Not approved.**

If the manuals submitted under § 157.108 or § 157.110 are not approved, the Coast Guard forwards a letter to the submitter with the reasons why the manuals were not approved.

#### **§ 157.116 Required documents: U.S. tank vessels.**

On and after June 1, 1981, the owner, operator, and master of a U.S. tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that the vessel does not engage in a voyage unless the vessel has on board—

(a) The letter under § 157.106 accepting the COW system plans;

(b) The letter of acceptance under § 157.142 after passing the inspections under § 157.140;

(c) The Coast Guard approved *Crude Oil Washing Operations and Equipment Manual* under § 157.112; and

(d) Any amending letters issued under § 157.158 approving changed characteristics.

#### **§ 157.118 Required documents: Foreign tank vessels.**

On and after June 1, 1981, the owner, operator, and master of a foreign tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that the vessel does not enter the navigable waters of the United States or transfer cargo at a port or place subject to the jurisdiction of the United States unless the vessel has on board—

(a) A *Crude Oil Washing Operations and Equipment Manual* that—

(1) Is approved under § 157.112; or

(2) Meets the manual standards in Resolution 15 of the MARPOL Protocol and is approved by the government of the vessel's flag state; and

(b) Evidence of acceptance of the tank vessel's COW system consisting of—

(1) A document from the government of the vessel's flag state that certifies the vessel's compliance with Resolution 15 of the MARPOL Protocol; or

(2) The following letters issued by the Coast Guard:

(i) The letter under § 157.106 accepting the COW system plans.

(ii) The letter of acceptance under § 157.142 after passing the inspections under § 157.140.

(iii) Any amending letters issued under § 157.158 approving changed characteristics.

#### **§ 157.120 Waiver of required documents.**

The Coast Guard waives the requirement for the letter under § 157.116(b), if a U.S. tank vessel engages in a voyage, or under § 157.118(b)(2)(ii), if a foreign tank vessel enters the navigable waters of the United States or transfers cargo at a port or place subject to the jurisdiction of the United States, for the purpose of being inspected under § 157.140.

#### **Design, Equipment, and Installation**

#### **§ 157.122 Piping, valves, and fittings.**

(a) Except as allowed in paragraph (c) of this section, the piping, valves, and fittings of each COW system must—

(1) Meet 46 CFR Part 56; and

(2) Be of steel or an equivalent material accepted by the Commandant.

(b) The piping of each COW system must be permanently installed.

(c) The piping of each COW system must be separate from other piping



systems on the vessel, except that the vessel's cargo piping may be a part of the COW piping if the cargo piping meets this section.

(d) The piping of each COW system must have overpressure relief valves or other means accepted by the Commandant to prevent overpressure in the piping of the COW system, unless the maximum allowable working pressure of that system is greater than the shut-off head of each pump that meets § 157.126(b).

(e) Each overpressure relief valve must discharge into the suction side of a pump that meets § 157.126(b).

(f) The piping and equipment of a COW system may not be in machinery spaces.

(g) Each hydrant valve for water washing in the piping of a COW system must—

(1) Have adequate strength to meet 46 CFR Part 56 for the working pressure for which the system is designed; and

(2) Be capable of being blanked off.

(h) Each sensing instrument must have an isolating valve at its connection to the piping of the COW system, unless the opening to that connection is 0.055 inches (1.4 millimeters) or smaller.

(i) If the washing system for cargo tanks has a steam heater used when water washing, it must be located outside the engine room and must be capable of being isolated from the piping of the COW system by—

(1) At least two shut-off valves in the inlet piping and at least two shut-off valves in the outlet piping; or

(2) Blank flanges identifiable as being closed (e.g., spectacle flanges).

(j) If the COW system has a common piping system for oil washing and water washing, that piping system must be designed to drain the crude oil into a slop tank or a cargo tank.

(k) The piping of a COW system must be securely attached to the tank vessel's structure with pipe anchors.

(l) When COW machines are used as pipe anchors, there must be other means available for anchoring the piping if these machines are removed.

(m) There must be a means to allow movement of the COW system piping as a result of thermal expansion and flexing of the tank vessel.

(n) The supply piping attached to each deck mounted COW machine and each COW machine that is audio inspected under § 157.155(a)(4)(ii) must have a shut-off valve.

(o) On combination carriers, piping of the COW system installed between each COW machine located in a cargo tank hatch cover and an adjacent location just outside the hatch coaming, may be

flexible hose with flanged connections that is acceptable by the Commandant.

#### § 157.124 COW tank washing machines.

(a) COW machines must be permanently mounted in each cargo tank.

(b) The COW machines in each tank must have sufficient nozzles with the proper diameter, working pressure, movement, and timing to allow the tank vessel to pass the inspections under § 157.140.

(c) Each COW machine and its supply piping must be supported to withstand vibration and pressure surges.

(d) There must be one portable drive unit available on board the vessel for every three COW machines on the vessel that use portable drive units.

(e) Except as allowed in paragraph (f) of this section, each cargo tank must have COW machines located to wash all horizontal and vertical areas of the tank by direct impingement, jet deflection, or splashing to allow the tank vessel to pass the inspections under § 157.140. The following areas in each tank must not be shielded from direct impingement by large primary structural members or any other structural member determined to be equivalent to a large primary structural member by the Commandant when reviewing the plans submitted under § 157.100 or § 157.102:

(1) 90 percent or more of the total horizontal area of the—

(i) Tank bottom;

(ii) Upper surfaces of large primary structural members; and

(iii) Upper surfaces of any other structural member determined to be equivalent to a large primary structural member by the Commandant.

(2) 85 percent or more of the total vertical area of the tank sides and swash bulkheads.

(f) Each cargo tank on a tank vessel having a COW system under § 157.10a(2) with complicated internal structural members does not have to meet paragraph (e) of this section if the following areas of all the cargo tanks of that vessel are washed by direct impingement and the tank vessel can pass the inspections under § 157.140:

(1) 90 percent or more of the total horizontal area of all the—

(i) Tank bottoms;

(ii) Upper surfaces of large primary structural members; and

(iii) Upper surfaces of any other structural member determined to be equivalent to a large primary structural member by the Commandant.

(2) 85 percent or more of the total vertical area of all the tank sides and swash bulkheads.

(g) Each single nozzle COW machine that is mounted to the deck must have a means located outside of the cargo tank that indicates the arc and rotation of the movement of the COW machine during COW operations.

(h) Each multi-nozzle COW machine that is mounted to the deck must have a means located outside of the cargo tank that indicates the movement of the COW machine during COW operations.

(i) Each COW machine mounted to or close to the bottom of a tank without a means located outside of the cargo tank that indicates movement of the machine must not be programmable.

Notes.—1. In the calculations to meet § 157.124 (e) or (f), areas that are shielded from direct impingement by structural members other than large primary structural members or swash bulkheads can be calculated as areas being washed by direct impingement.

2. One or more types of COW machines could be used to meet § 157.124 (e) or (f).

#### § 157.126 Pumps.

(a) Crude oil must be supplied to the COW machines by COW system pumps or cargo pumps.

(b) The pumps under paragraph (a) of this section must be designed and arranged with sufficient capacity to meet the following:

(1) A sufficient pressure and flow is supplied to allow the simultaneous operation of those COW machines designed to operate simultaneously.

(2) If an eductor is used for tank stripping, enough driving fluid is provided by the pumps to allow the eductor to meet § 157.128(a).

(c) There must be means on the tank vessel to maintain the pressure under paragraph (b) of this section when shore terminal back pressure is less than the pressure under paragraph (b) of this section.

(d) The COW system must have two or more pumps that are capable of supplying oil to the COW machines.

(e) The COW system must be designed to meet the requirements of this subpart with any one pump not operating.

#### § 157.128 Stripping system.

(a) Each tank vessel under § 157.10(e) or having a COW system under § 157.10a(2) must have a stripping system that is designed to remove crude oil from—

(1) Each cargo tank at 1.25 times the rate at which all the COW machines that are designed to simultaneously wash the bottom of the tank, are operating; and

(2) The bottom of each tank to allow the tank vessel to pass the inspection under § 157.140(a)(2).



(b) Each cargo tank must be designed to allow the level of crude oil in the tank to be determined by—

(1) Hand dipping at the aftermost portion of the tank and three other locations; or

(2) Any other means accepted by the Commandant.

(c) Each stripping system must have at least one of the following devices for stripping oil from each cargo tank:

(1) A positive displacement pump.

(2) A self-priming centrifugal pump.

(3) An eductor

(4) Any other device accepted by the Commandant.

(d) There must be a means in the stripping system piping between the device under paragraph (c) of this section and each cargo tank to isolate each tank from the device.

(e) If the stripping system has a positive displacement pump or a self-priming centrifugal pump, the stripping system must have the following:

(1) In the stripping system piping—

(i) A pressure gauge at the inlet connection to the pump; and

(ii) A pressure gauge at the discharge connection to the pump.

(2) At least one of the following monitoring devices to indicate operation of the pump.

(i) Flow indicator.

(ii) Stroke counter.

(iii) Revolution counter.

(f) If the stripping system has an eductor, the stripping system must have—

(1) A pressure gauge at each driving fluid intake and at each discharge; and

(2) A pressure/vacuum gauge at each suction intake.

(g) The equipment required under paragraphs (e) and (f) of this section must have indicating devices in the cargo control room or another location that is accepted by the Commandant.

#### **§ 157.130 Crude oil washing with more than one grade of crude oil.**

If a tank vessel under § 157.10(e) or having a COW system under § 157.10(a)(2) carries more than one grade of crude oil, the COW system must be capable of crude oil washing the cargo tanks with the grades of crude oil that the vessel carries.

#### **§ 157.132 Cargo tanks: hydrocarbon vapor emissions.**

Each tank vessel having a COW system under § 157.10(a)(2) without sufficient segregated ballast tanks or dedicated clean ballast tanks to allow the vessel to depart from any port in the United States without ballasting cargo tanks must have—

(a) A means to discharge hydrocarbon vapors from each cargo tank that is

ballasted to a cargo tank that is discharging crude oil; or

(b) Any other means accepted by the Commandant that prevents hydrocarbon vapor emissions when the cargo tanks are ballasted in port.

#### **§ 157.134 Cargo tank drainage.**

Each cargo tank must be designed for longitudinal and transverse drainage of crude oil to allow the tank vessel to pass the inspections under § 157.140.

#### **§ 157.136 Two-way voice communications.**

Each tank vessel under § 157.10(e) or having a COW system under § 157.10(a)(2) must have a means that enables two-way voice communications between the main deck watch required under § 157.168 and each cargo discharge control station.

#### **§ 157.138 Crude Oil Washing Operations and Equipment Manual.**

(a) Each *Crude Oil Washing Operations and Equipment Manual* must include the following information:

(1) The text of the Annex of Resolution 15 of the MARPOL Protocol.

(2) A line drawing of the tank vessel's COW system showing the locations of pumps, piping, and COW machines.

(3) A description of the COW system.

(4) The procedure for the inspection of the COW system during COW operations.

(5) Design characteristic information of the COW system that includes the following:

(i) Pressure and flow of the crude oil pumped to the COW machines.

(ii) Revolutions, number of cycles, and length of cycles of each COW machine.

(iii) Pressure and flow of the stripping suction device.

(iv) Number and location of COW machines operating simultaneously in each cargo tank.

(6) The design oxygen content of the gas or mixture of gases that is supplied by the inert gas system to each cargo tank.

(7) The results of the inspections recorded when passing the inspections under § 157.140.

(8) Characteristics of the COW system recorded during the COW operations when passing the inspections under § 157.140 that includes the following:

(i) Pressure and flow of the crude oil pumped to the COW machines.

(ii) Revolutions, number of cycles, and length of cycles of each COW machine.

(iii) Pressure and flow of the stripping device.

(iv) Number and location of COW machines operating simultaneously in each cargo tank.

(9) The oxygen content of the gas or mixture of gases that is supplied by the inert gas system to each cargo tank recorded during COW operations when passing the inspections under § 157.140.

(10) The volume of water used for water rinsing recorded during COW operations when passing the inspections under § 157.140.

(11) The trim conditions of the tank vessel recorded during COW operations when passing the inspections under § 157.140.

(12) The procedure for stripping cargo tanks of crude oil.

(13) The procedure for draining and stripping the pumps and piping of the COW system, cargo system, and stripping system after each crude oil cargo discharge.

(14) The procedure for crude oil washing cargo tanks that includes the following:

(i) The tanks to be crude oil washed to meet § 157.160.

(ii) The order in which those tanks are washed.

(iii) The single-stage or multi-stage method of washing each tank.

(iv) The number of COW machines that operate simultaneously in each tank.

(v) The duration of the crude oil wash and water rinse.

(vi) The volume of water to be used for water rinse in each tank.

(15) The procedures and equipment needed to prevent leakage of crude oil from the COW system.

(16) The procedures and equipment needed if leakage of crude oil from the COW system occurs.

(17) The procedures for testing and inspecting the COW system for leakage of crude oil before operating the system.

(18) The procedures and equipment needed to prevent leakage of crude oil from the steam heater under § 157.122(i) to the engine room.

(19) The number of crew members needed to conduct the following:

(i) The discharge of cargo.

(ii) The crude oil washing of cargo tanks.

(iii) The simultaneous operations in paragraphs (a)(19) (i) and (ii) of this section.

(20) A description of the duties of each crew member under paragraph (a)(19) of this section.

(21) The procedures for ballasting and deballasting cargo tanks.

(22) The step by step procedure for the inspection of the COW system by vessel personnel before COW operations begin that includes the procedure for inspecting and calibrating each instrument. (Operational Checklist)



(23) The intervals for on board inspection and maintenance of the COW equipment. Informational references to technical manuals supplied by the manufacturers may be included in this part of the manual.

(24) A list of crude oils that are not to be used in COW operations.

(25) The procedure to meet § 157.155(a)(4).

(b) In addition to meeting paragraph (a) of this section, each manual under paragraph (a) of this section on a tank vessel having a COW system under § 157.10a(a)(2) must include the following:

(1) The procedure to meet § 157.166.

(2) The procedures to meet § 157.155(B).

#### Inspections

##### § 157.140 Tank vessel inspections.

(a) Before issuing a letter under § 157.142, the Coast Guard makes an initial inspection of each U.S. tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) and each foreign tank vessel whose owner or operator submitted the plans under § 157.102 to determine whether or not the cargo tanks that carry crude oil when entering a port meet the following:

(1) After each tank is crude oil washed but not water rinsed, except the bottom of the tank may be flushed with water and stripped, each tank is essentially free of oil clingage or deposits of oil, or both to a degree acceptable to the Coast Guard inspector.

(2) After the tanks that are to be used as ballast tanks when leaving the port are crude oil washed and stripped but not water rinsed or bottom flushed, they are filled with water and the total volume of crude oil floating on top of the water in these tanks is 0.085 percent or less of the total volume of these tanks.

(b) Except on a tank vessel under § 157.10(e), if the initial inspection under paragraph (a) of this section has been passed and the vessel arrives at the first cargo loading port after completing a ballast voyage, the Coast Guard monitors the discharge of effluent from those tanks that have been crude oil washed, water rinsed, stripped, and filled with ballast water to determine whether or not the oil content of the effluent is 15 ppm or less.

##### § 157.142 Letter of acceptance: inspections.

If the inspections under § 157.140 are passed, the Coast Guard issues to the tank vessel a letter that states that the vessel complies with this subpart.

##### § 157.144 Tank vessels of the same class: inspections.

(a) If more than one tank vessel is constructed from the same plans, the owner or operator may submit a written request to the Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593, for only one of those tank vessels to be inspected under § 157.140.

(b) Only one tank vessel of the class is inspected under § 157.140, if the Commandant accepts the request submitted under paragraph (a) of this section.

##### § 157.146 Similar tank design: inspections U.S. tank vessels.

(a) If a U.S. tank vessel has tanks similar in dimensions and internal structure, the owner or operator may submit a written request to the Officer in Charge, Marine Inspection, of the zone in which the COW system is inspected, for only one of those tanks to be inspected under § 157.140(a)(1).

(b) Only one tank of a group of tanks similar in dimensions and internal structure is inspected under § 157.140(a)(1), if the Officer in Charge, Marine Inspection, accepts the request submitted under paragraph (a) of this section.

##### § 157.147 Similar tank design: inspections on foreign tank vessels.

(a) If a foreign tank vessel has tanks similar in dimensions and internal structure, the owner or operator may submit a written request to the Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593, for only one of those tanks to be inspected under § 157.140(a)(1).

(b) Only one tank of a group of tanks similar in dimensions and internal structure is inspected under § 157.140(a)(1), if the Commandant accepts the request submitted under paragraph (a) of this section.

##### § 157.148 COW system: Evidence for inspections.

(a) Before the inspections under § 157.140 are conducted by the Coast Guard, the owner or operator of a foreign tank vessel that is to be inspected must submit to the Coast Guard inspector evidence that the COW system has been installed in accordance with the plans accepted under § 157.106.

(b) Before the inspections under § 157.140 are conducted by the Coast Guard, the owner or operator of a tank vessel that is to be inspected must submit to the Coast Guard inspector evidence that the COW piping system has passed a test of 1½ times the design working pressure.

##### § 157.150 Crude Oil Washing Operations and Equipment Manual: Recording information after inspections.

After passing the inspections under § 157.140, the owner, operator, and master shall ensure that the following are recorded in the *Crude Oil Washing Operations and Equipment Manual* approved under § 157.112:

(a) The results of the inspections under § 157.140.

(b) The following characteristics used to pass the inspections under § 157.140:

(1) Pressure and flow of the crude oil pumped to the COW machines.

(2) Revolutions, number of cycles, and length of cycles of each COW machine.

(3) Pressure and flow of the stripping suction device.

(4) Number and location of COW machines operating simultaneously in each cargo tank.

(5) Volume of water used for water rinsing.

(6) Trim conditions of the tank vessel.

#### Personnel

##### § 157.152 Person in charge of COW operations.

The owner, operator, and master of a tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that the person designated as the person in charge of COW operations—

(a) Knows the contents in the *Crude Oil Washing Operations and Equipment Manual* approved by the Coast Guard under § 157.112 or by the government of the vessel's flag state;

(b) On at least two occasions, has participated in crude oil washing of cargo tanks, one of those occasions occurring on—

(1) The tank vessel on which the person assumes duties as the person in charge of COW operations; or

(2) A tank vessel that is similar in tank design and which has COW equipment similar to that used on the tank vessel on which the person assumes duties as the person in charge of COW operations; and

(c) Has one year or more of tank vessel duty that includes oil cargo discharge operations and—

(1) Crude oil washing of cargo tanks; or

(2) Has completed a training program in crude oil washing operations that is approved by the Coast Guard or the government of the vessel's flag state.

Note.—Standards of a Coast Guard approved training program are to be developed.

##### § 157.154 Assistant personnel.

The owner, operator, and master of a tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall



ensure that each member of the crew that has a designated responsibility during COW operations—

- (a) Has six months or more of tank vessel duty that includes oil cargo discharge operations;
- (b) Has been instructed in the COW operation of the tank vessel; and
- (c) Is familiar with the contents of the *Crude Oil Washing Operations and Equipment Manual* approved by the Coast Guard under § 157.112 or by the government of the vessel's flag state.

#### COW Operations

##### § 157.155 COW operations: General.

(a) The master of a tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that—

(1) Before crude oil washing a cargo tank, the level in each tank with crude oil that is used as a source for crude oil washing is lowered at least one meter;

(2) A tank used as a slop tank is not used as a source for crude oil washing until—

(i) Its contents are discharged ashore or to another tank; and

(ii) The tank contains only crude oil;

(3) During COW operations—

(i) The valves under § 157.122(i)(1) are shut; or

(ii) The blanks under § 157.122(i)(2) are installed;

(4) The rotation of each COW machine mounted to or close to the bottom of each cargo tank is verified by—

(i) A visual inspection of a means located outside of the cargo tank that indicates movement of the machine during COW operations;

(ii) An audio inspection during COW operations; or

(iii) An inspection on a ballast voyage, with water as the fluid flowing through the machine;

(5) During the audio inspection under paragraph (a)(4)(ii) of this section, the COW machine being inspected is the only one operating in that tank;

(6) Before the inspection under paragraph (a)(4)(iii) of this section, the tank that has the COW machine being inspected in it, is gas freed;

(7) Each COW machine that is inspected under paragraph (a)(4)(iii) of this section is inspected at least once after every sixth COW operation of that machine, but no less than once every 12 months;

(8) After each stripping operation is completed, each tank—

(i) Is sounded by a means under § 157.128(b); and

(ii) Contains no oil except a minimal quantity near the stripping suction;

(9) Before the tank vessel begins each ballast voyage, each cargo tank and

each cargo main, stripping, and COW piping is stripped of crude oil and the strippings are conveyed ashore through the piping under § 157.11(d)(3) or § 157.11(e)(4);

(10) Before water washing the cargo tanks, the piping of the COW system is drained of crude oil;

(11) When the cargo tanks are not being water washed, the hydrant valves under § 157.122(g) are blanked off;

(12) If COW machines that are used as anchors for the piping of the COW system are removed, the means available under § 157.122(1) for anchoring the piping are installed;

(13) The fire main is not connected to the COW system; and

(14) On combination carriers, if flexible hoses under § 157.122(o) are used, those hoses are protectively stowed when not installed in the COW piping system.

(b) In addition to meeting paragraph (a) of this section, the master of a tank vessel having a COW system under § 157.10a(a)(2) shall ensure that—

(1) Before ballasting cargo tanks upon leaving a port, each cargo pump, manifold, and piping that is used for ballasting the cargo tanks is drained of all crude oil; and

(2) Before ballasting or deballasting cargo tanks, except when ballasting cargo tanks to leave a port, the cargo piping that is used for ballasting or deballasting the cargo tanks is water washed.

##### § 157.156 COW operations: Meeting manual requirements.

Except as allowed in § 157.158, the master of a foreign tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) that has a *Crude Oil Washing Operations and Equipment Manual* approved under § 157.112 and is operating in the navigable waters of the United States or transferring cargo on a port or place subject to the jurisdiction of the United States and the master of a U.S. tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that during each COW operation—

(a) The procedures listed in the *Crude Oil Washing Operations and Equipment Manual* are followed; and

(b) The characteristics recorded in the *Crude Oil Washing Operations and Equipment Manual* under § 157.150(b) are met.

##### § 157.158 COW operations: Changed characteristics.

The COW system may be operated with characteristics that do not meet those recorded under § 157.150(b) only if—

(a) The tank vessel passes the inspections under § 157.140 using the changed characteristics;

(b) The changed characteristics used to pass the inspections under § 157.140 are recorded in the *Crude Oil Washing Operations and Equipment Manual* approved under § 157.112; and

(c) The Coast Guard issues to the tank vessel an amending letter stating that the tank vessel complies with this subpart with these characteristics.

##### § 157.160 Tanks: Ballasting and crude oil washing.

(a) The owner, operator, and master of a tank vessel under § 157.10(e) shall ensure that—

(1) Ballast water is carried only in a cargo tank as allowed under § 157.35;

(2) For sludge control, at least 25 percent of the cargo tanks are crude oil washed before each ballast voyage and that each cargo tank is crude oil washed at least once every fourth time crude oil is discharged from the tank, but no tank need be crude oil washed more than once during each 120 day period;

(3) Ballast water in a cargo tank that is crude oil washed but not water rinsed during or after the most recent discharge of crude oil from that tank is discharged in accordance with § 157.37(a); and

(4) Cargo tanks are not crude oil washed during a ballast voyage.

(b) The owner, operator, and master of a tank vessel having a COW system under § 157.10a(a)(2) shall ensure that—

(1) Ballast water is carried only in a cargo tank that is crude oil washed during or after the most recent discharge of crude oil from that tank;

(2) Before each ballast voyage a sufficient number of cargo tanks have been crude oil washed during or after the most recent discharge of crude oil from those tanks to allow ballast water to be carried in cargo tanks—

(i) With a total capacity to meet the draft and trim requirements in § 157.10a(d); and

(ii) For the vessel's trading pattern and expected weather conditions;

(3) For sludge control, at least 25 percent of the cargo tanks not used for carrying ballast water under paragraph (b)(2)(i) of this section are crude oil washed before each ballast voyage, and

that each cargo tank is crude oil washed at least once every fourth time crude oil is discharged from the tank, but no tank need be crude oil washed more than once during each 120 day period;

(4) Cargo tanks are not crude oil washed during a ballast voyage; and

(5) Ballast water in a cargo tank that is crude oil washed but not water rinsed during or after the most recent discharge



of crude oil from that tank is discharged in accordance with § 157.37(a).

**§ 157.162 Crude oil washing during a voyage.**

The master of a tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure that each cargo tank that is crude oil washed during a voyage other than a ballast voyage—

- (a) Remains empty so that the tank may be inspected upon arrival at the next discharge port; and
- (b) If it is to be used as a ballast tank when leaving the discharge port, is ballasted before the vessel departs from that discharge port so that the tank may be inspected under § 157.140(a)(2).

**§ 157.164 Use of inert gas system.**

(a) The master of a tank vessel under § 157.10(e) or having a COW system under § 157.10a(a)(2) shall ensure the following:

- (1) Before each cargo tank is crude oil washed, the oxygen content in the tank is measured at each of the following locations in the tank:
  - (i) One meter from the deck.
  - (ii) In the center of the ullage space.
- (2) Before each cargo tank with partial bulkheads is crude oil washed, each area of that tank formed by each partial bulkhead is measured in accordance with paragraph (a) of this section.
- (3) Before each cargo tank is crude oil washed, the oxygen content in that tank is 8 percent or less by volume at the locations under paragraph (a)(1) of this section.
- (4) During COW operations, the following are maintained in each cargo tank being crude oil washed:
  - (i) A gas or a mixture of gases with an oxygen content of 8 percent or less by volume.
  - (ii) A positive atmospheric pressure.
- (5) During COW operations, a crew member monitors the instrumentation under 46 CFR 32.53-60(a)(1), except if that instrumentation has an alarm that sounds in the cargo control room when the oxygen content exceeds 8 percent by volume.

(b) Crude oil washing of the cargo tanks must be terminated when paragraph (a)(4) of this section is not met and crude oil washing of that tank may not be resumed until the requirements of paragraph (a)(4) of this section are met.

**§ 157.166 Hydrocarbon vapor emissions.**

If a tank vessel having a COW system under § 157.10a(a)(2) transfers cargo at a port in the United States that is in an area designated in 40 CFR Part 81 as an area that does not meet the national

primary ambient air quality ozone standard under 40 CFR Part 50, issued under the Clean Air Act, as amended (42 U.S.C. 1857), the master of that vessel shall ensure that when cargo tanks are ballasted in that port the hydrocarbon vapors in those tanks are contained by a means under § 157.132.

**Note.**—Questions relating to whether or not a particular port is located in an area designated in 40 CFR Part 81 as an area that does not meet the national primary ambient air quality ozone standard under 40 CFR Part 50 can be answered by contacting the Plans Analysis Section of the Environmental Protection Agency at (919) 541-5365.

**§ 157.168 Crew member: Main deck watch.**

During COW operations, the master shall ensure that at least one member of the crew with a designated responsibility for monitoring COW operations is on the main deck at all times.

**§ 157.170 COW equipment: Removal.**

(a) Whenever a deck mounted COW machine is removed from the tank, the master shall ensure that—

- (1) The supply piping to that machine is blanked off; and
- (2) The tank opening is sealed by a secured plate made of steel or an equivalent material accepted by the Commandant.

(b) If the equipment for the COW system is removed from a cargo tank for the carriage of cargoes other than crude oil and then reinstalled, the master shall ensure that, before COW operations are conducted, the system has no crude oil leakage.

**§ 157.172 Limitations on grades of crude oil carried.**

If a tank vessel having a COW system under § 157.10a(a)(2) does not have segregated ballast tanks or dedicated clean ballast tanks that meet § 157.10a(d), the owner, operator, and master shall ensure that the vessel carries only the grades of crude oil that can be used for crude oil washing.

**Subpart E—Dedicated Clean Ballast Tanks on Tank Vessels**

**Authority.**—Sec. 5, Port and Tanker Safety Act of 1978, 92 Stat. 1480 (46 U.S.C. 391a); 49 CFR 1.46(n)(4).

**General**

**§ 157.200 Plans for U.S. tank vessels: Submission.**

(a) Before June 1, 1981 the owner or operator of each U.S. tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) must submit to the Coast Guard plans that include—

(1) The dedicated clean ballast tank arrangement; and

(2) A drawing or diagram of the pumping and piping system for the dedicated clean ballast tanks.

(b) Plans under paragraph (a) of this section must be submitted to the Officer in Charge, Marine Inspection, of the zone in which the dedicated clean ballast tank system is installed or one of the following Coast Guard field technical offices:

(1) Commander, 3rd Coast Guard District (mmt), Governors Island, New York, N.Y. 10004, if the dedicated clean ballast tank system is installed in the area under the 1st or 3rd Coast Guard Districts.

(2) Commander, 5th Coast Guard District (mmt), 431 Crawford Street, Portsmouth, Virginia 23705, if the dedicated clean ballast tank system is installed in the area under the 5th or 7th Coast Guard Districts.

(3) Commander, 8th Coast Guard District (mmt), 500 Camp Street, Hale Boggs Federal Building, New Orleans, Louisiana 70130, if the dedicated clean ballast tank system is installed in the area under the 2nd or 8th Coast Guard Districts.

(4) Commander, 9th Coast Guard District (mmt), 601 Rockwell Ave., Cleveland, Ohio 44114, if the dedicated clean ballast tank system is installed in the area under the 9th Coast Guard District.

(5) Commander, 12th Coast Guard District (mmt), 630 Sansome Street, San Francisco, California 94126, if the dedicated clean ballast tank system is installed in the area under the 11th, 12th, 13th, 14th, or 17th Coast Guard Districts.

**§ 157.202 Plans and documents for foreign tank vessels: Submission.**

If the owner or operator of a foreign tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) desires the letter from the Coast Guard under § 157.204 accepting the plans submitted under this paragraph, the owner or operator must submit to the Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593—

(a) Plans that include—

(1) The dedicated clean ballast tank arrangement; and

(2) A drawing or diagram of the pumping and piping system for the dedicated clean ballast tanks; and

(b) Documentation from the authority that assigned the load line to the tank vessel that states that the location of the dedicated clean ballast tanks is acceptable to that authority.



**§ 157.204 Letter of acceptance.**

The Coast Guard informs the submitter by letter that the plans submitted under § 157.200 or the plans and documents submitted under § 157.202 are accepted, if the plans submitted under § 157.200 or the plans and documents submitted under § 157.202 show that the dedicated clean ballast tank system meets this subpart.

**§ 157.206 Dedicated Clean Ballast Tanks Operations Manual for U.S. tank vessels: Submission.**

Before June 1, 1981, the owner or operator of a U.S. tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) must submit two copies of a *Dedicated Clean Ballast Tanks Operations Manual* that meets § 157.224 to the Officer in Charge, Marine Inspection, of the zone in which the dedicated clean ballast tank system is installed or to the appropriate Coast Guard field technical office listed in § 157.200(b).

**§ 157.208 Dedicated Clean Ballast Tanks Operations Manual for foreign tank vessels: Submission.**

If the owner or operator of a foreign tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) desires a Coast Guard approved *Dedicated Clean Ballast Tanks Operations Manual* under § 157.210, the owner or operator must submit two copies of a manual that meets § 157.224 to the Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593.

**§ 157.210 Approved Dedicated Clean Ballast Tanks Operations Manual.**

If the manuals submitted under § 157.206 or § 157.208 meet § 157.224, the Coast Guard approves the manuals and forwards one of the approved manuals to the submitter.

**§ 157.212 Dedicated Clean Ballast Tanks Operations Manual: Not approved.**

If the *Dedicated Clean Ballast Tanks Operations Manual* submitted under § 157.206 or § 157.208 is not approved, the Coast Guard forwards a letter to the submitter with the reasons why the manual was not approved.

**§ 157.214 Required documents: U.S. tank vessels.**

On and after June 1, 1981, the owner, operator, and master of a U.S. tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that the vessel does not engage in a voyage unless the vessel has on board—

(a) The letter under § 157.204 accepting the dedicated clean ballast tank system plans;

(b) The Coast Guard approved *Dedicated Clean Ballast Tanks Operations Manual* under § 157.210; and

(c) Any amending letters issued under § 157.218 approving alterations.

**§ 157.216 Required documents: Foreign tank vessels.**

On and after June 1, 1981, the owner, operator, and master of a foreign tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that the vessel does not enter the navigable waters of the United States or transfer cargo at a port or place subject to the jurisdiction of the United States unless the vessel has on board—

(a) A *Dedicated Clean Ballast Tanks Operations Manual* that—

(1) Is approved under § 157.210; or  
(2) That meets the manual standards in Resolution 14 of the MARPOL Protocol and is approved by the government of the vessel's flag state; and

(b) Evidence of acceptance of the tank vessel's dedicated clean ballast tank system consisting of—

(1) A document from the government of the vessel's flag state that certifies the vessel's compliance with Resolution 14 of the MARPOL Protocol; or

(2) The letter under § 157.204 accepting the dedicated clean ballast tank system plans and any amending letters issued under § 157.218 approving alterations.

**§ 157.218 Dedicated clean ballast tanks: Alterations.**

The dedicated clean ballast tanks or equipment on a tank vessel that has a letter issued under § 157.204 may not be altered so that they no longer meet the plans accepted under that section unless—

(a) The owner or operator of that vessel submits plans that show the alterations to the Coast Guard official to which the plans were submitted under § 157.200 or § 157.202;

(b) The owner or operator of that vessel submits changes to the manual under § 157.224 that show and describe the alterations to the Coast Guard official to which the manuals were submitted under § 157.206 or § 157.208; and

(c) The Coast Guard issues to the tank vessel an amending letter stating that the vessel, as altered, complies with this subpart.

**Design and Equipment****§ 157.220 Dedicated clean ballast tanks: Standards.**

(a) Cargo tanks that are designated as dedicated clean ballast tanks must allow the tank vessel to meet the draft and trim requirements under § 157.10a(d) when filled with ballast water.

(b) Each tank under paragraph (a) of this section must be—

- (1) A wing tank; or
- (2) Any other tank that is accepted by the Commandant.

**§ 157.222 Pump and piping arrangements.**

(a) Dedicated clean ballast tanks must be connected to the least practicable—

- (1) Number of pumps; and
- (2) Amount of piping.

(b) Each piping system that is arranged to convey clean ballast and cargo must be designed to be flushed to the slop tank with water.

(c) The piping system of each dedicated clean ballast tank must be arranged so that oily water does not enter any dedicated clean ballast tank when the piping system is flushed.

(d) The piping system of each dedicated clean ballast tank must have at least two valves that isolate that tank from each cargo tank.

(e) The piping system of the dedicated clean ballast tanks must have a sample point that is located in a vertical section of discharge piping.

Note.—An example of a sample point is shown in 46 CFR Figure 162.050-17(e).

**§ 157.224 Dedicated Clean Ballast Tanks Operations Manual.**

Each *Dedicated Clean Ballast Tanks Operations Manual* must include the following information:

(a) The text of the Annex of Resolution 14 of the MARPOL Protocol.

(b) A description of the dedicated clean ballast tanks system.

(c) A procedure for dedicated clean ballast tanks operations.

Note.—Appendix D is an example of such a procedure.

**Dedicated Clean Ballast Tanks Operations****§ 157.225 Dedicated clean ballast tanks operations: General.**

The master of a tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that—

(a) Before clean ballast in any dedicated clean ballast tank is discharged or transferred, the pump and piping system for conveying the clean ballast are flushed with water;



(b) Before any dedicated clean ballast tank is ballasted, the pump and piping system for conveying the ballast are flushed with water;

(c) Before the pump and piping system of the dedicated clean ballast tanks are used for cargo transfer—

(1) If water in the dedicated clean ballast tanks is used for flushing the pump and piping system, the volume of water for flushing is equal to at least 10 times the volume of the piping to be flushed;

(2) The piping system is drained of fluid; and

(3) The valves under § 157.222(d) are closed;

(d) Flushing water is pumped from a sea chest or a dedicated clean ballast tank through the pump and piping system of the dedicated clean ballast tanks and then to a slop tank;

(e) Clean ballast from each dedicated clean ballast tank is discharged in accordance with § 157.43;

(f) When the pump and piping system are being flushed—

(1) The oil content of the flushing water in the piping system is monitored; and

(2) The pump and piping system are flushed until the oil content of the flushing water in the piping stabilizes; and

(g) If any pump or piping system that is flushed to meet paragraph (f) of this section is used to convey cargo during an emergency, that pump or piping system is flushed again to meet paragraph (f) of this section before being used to convey clean ballast.

#### § 157.226 Dedicated Clean Ballast Tanks Operations Manual: Procedures to be followed.

The master of a foreign tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) that has a *Dedicated Clean Ballast Tanks Operations Manual* approved under § 157.210 and is operating in the navigable waters of the United States or transferring cargo at a port or place subject to the jurisdiction of the United States and the master of a U.S. tank vessel under § 157.10a(b) of having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that the procedures listed in the *Dedicated Clean Ballast Tanks Operations Manual* are followed.

#### § 157.228 Isolating valves: Closed during a voyage.

(a) The master of each U.S. tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that the

valves under § 157.222(d) remain closed during a voyage.

(b) The master of each foreign tank vessel under § 157.10a(b) or having dedicated clean ballast tanks under § 157.10a(c)(2) shall ensure that the valves under § 157.222(d) remain closed when the vessel is on a voyage in the navigable waters of the United States.

#### Appendix C—Procedure for Determining Distribution of Segregated Ballast Tanks To Provide Protection Against Oil Outflow in the Event of Grounding, Ramming, or Collision

1. *Source.* The procedure for determining the distribution of segregated ballast tanks contained in this appendix conforms to Regulation 13E of the MARPOL Protocol.

2. *Procedure.* Protective location of segregated ballast tanks, voids, and other spaces that do not carry cargo which are within the cargo tank length is determined from the following:

$$\Sigma PA_c + \Sigma PA_s = J[L(B + 2D)]$$

Where—

$PA_c$  = the side shell area in square meters based on projected molded dimensions for each segregated ballast tank, void, or other space that does not carry cargo and which complies with paragraph 2(b) of this appendix;

$PA_s$  = the bottom shell area in square meters based on projected molded dimensions for each segregated ballast tank, void, or other space that does not carry cargo and which complies with paragraph 2(b) of this appendix;

$L$  = the length in meters between the forward and after extremities of the cargo tanks;

$B$  = the maximum breadth of the ship in meters measured amidship to the molded line of the frame; and

$D$  = the molded depth in meters measured vertically from the top of the keel plate to the top of the freeboard deck beam at the side amidships. In tank vessels having rounded gunwales, the molded depth is measured from the top of the keel plate to the point of intersection of the molded lines of the deck and side shell plating, the lines being extended as though the gunwale were of angular design.

(a) *Method of determining a value for J.*

(1) For tank vessels for 20,000 DWT,  $J = 0.45$ .

(2) For tank vessels of 200,000 DWT or more—

(i)  $J = 0.30$ ; or

(ii)  $J$  = the greater of 0.20, or

$$0.30 - \left[ \frac{a - (0_c + 0_s)}{40A} \right],$$

where:

$a = 0.25$  for tank vessels of 200,000 DWT.

$a = 0.40$  for tank vessels of 300,000 DWT.

$a = 0.50$  for tank vessels of 420,000 DWT.

For values of DWT between 200,000 and 300,000 DWT, 300,000 and 420,000 DWT, and greater than 420,000 DWT, the value of "a" is determined by linear interpolation.

$0_c$  = as calculated in Appendix A of this part.

$0_s$  = as calculated in Appendix A of this part.

$0_A$  = the allowable oil outflow meeting § 157.19(b)(1) of this part.

(3) For values of DWT between 20,000 and 200,000 DWT, the value of "J" is determined by linear interpolation between 0.45 and 0.30 respectively.

(b)  $PA_c$  and  $PA_s$ : *Criteria for determining the segregated ballast tanks, voids, and other spaces that do not carry cargo.*

The following criteria are to be met for a segregated ballast tank, void, or space that does not carry cargo, to be used in determining  $PA_c$  and  $PA_s$ :

(1) The minimum width of each wing tank or space, either of which extends for the full depth of the vessel's side or from the main deck to the top of the double bottoms is 2 meters or more. The width is measured inboard from the vessel's side shell plating at right angles to the vessel's center line. If a wing tank or space has a width anywhere within it that is less than 2 meters, that wing tank or space is not used when calculating  $PA_c$ .

(2) The minimum vertical depth of each double bottom tank or space is  $B/15$  or 2 meters, whichever is smaller. If a double bottom tank or space has a depth less than  $B/15$  or 2 meters, whichever is smaller, anywhere within it, the double bottom or space is not to be used when calculating  $PA_s$ .

(3) The minimum width of a wing tank or space is not measured in the way of—

(i) the turn of the bilge area; or

(ii) a rounded gunwale area.

(4) The minimum depth of a double bottom tank or space is not measured in the way of the turn of the bilge area.

#### Appendix D—Example of a Procedure for Dedicated Clean Ballast Tanks Operations

1. *Source.* The example procedure for dedicated clean ballast tanks operation contained in this appendix conforms to the Annex of Resolution 14 of the MARPOL Protocol.

2. *Example Procedure.* Dedicated clean ballast tanks operational procedure:

(a) Before arrival at the loading port:

(1) Transfer all remaining slop to a cargo tank.

(2) Ensure that the pumping and piping designated for clean ballast operation have been properly cleaned to accommodate simultaneous discharge of clean ballast while loading.

(3) Ensure that all valves to the slop tank and the cargo tanks are closed.

(4) Perform visual inspection of all dedicated clean ballast tanks and their contents, if any, for signs of contamination.

(5) Discharge a sufficient amount of clean ballast water to ensure that remaining ballast water and cargo to be loaded will not exceed the permissible deadweight or draft. Leave a sufficient amount of water for flushing the piping, and as a minimum, a quantity equal to 10 times the volume of the affected piping.

(6) Ensure that all valves to the dedicated clean ballast tanks are closed.

(7) If no further ballast discharge is anticipated, drain the clean ballast piping.



- (b) In the loading port:
    - (1) Perform normal loading operations of cargo tanks.
    - (2) Ensure sufficient slop tank capacity is available for subsequent reception of cargo pump and piping flushings.
    - (3) When applicable, discharge remaining clean ballast before entire piping system is used for loading. Leave the required minimum quantity of flushing water in ballast tanks.
    - (4) Ensure that all valves to the dedicated clean ballast tanks are closed.
    - (5) Ensure that all valves to the cargo tank are closed upon completion of loading.
  - (c) After departure from the loading port:
    - (1) Flush appropriate pumping and piping with sufficient water from dedicated clean ballast tanks into a slop tank.
    - (2) Ensure that valves to the slop tank are closed before pumping the remaining clean water overboard and monitoring oil content of the water.
    - (3) Ensure that all valves in the dedicated clean ballast tanks are closed.
  - (d) Before arrival at the unloading port:
    - (1) Ensure that all valves to the slop tank and cargo tanks are closed.
    - (2) Recheck that the pumping and piping designated for clean ballast operation have been properly cleaned.
    - (3) Ballast through clean cargo pumps and piping, considering the port's draft requirements.
    - (4) Ensure that all valves in the dedicated clean ballast tanks are closed.
  - (e) In the unloading port:
    - (1) Allocate pumping and piping intended for clean ballast operation.
    - (2) Perform normal unloading operations.
    - (3) As soon as draft conditions permit, complete ballasting to departure conditions.
    - (4) Ensure that all valves to the dedicated clean ballast tanks are closed.
    - (5) Complete unloading.
    - (f) After departure from the unloading port:
      - (1) Flush pumps and piping servicing the dedicated clean ballast tanks into the slop tank.
      - (2) Top up dedicated clean ballast tanks.
      - (3) Process the slop tank content in accordance with load on top (LOT) procedures.
- [92 Stat. 1480 (Sec. 5, Port and Tanker Safety Act of 1978, 46 U.S.C. 391a); 49 CFR 1.46(n)(4)]
- Dated: November 13, 1979.

R. H. Scarborough,  
Vice Admiral, U.S. Coast Guard, Acting  
Commandant.

[FR Doc. 79-35824 Filed 11-16-79; 8:45 am]  
BILLING CODE 4910-14-M

### 33 CFR Part 164

[CGD 77-063]

#### Tank Vessels of 10,000 Gross Tons or More; Improved Steering Gear Requirements

AGENCY: Coast Guard, DOT.

ACTION: Final rules.

SUMMARY: These regulations adopt improved steering gear requirements for

tank vessels of 10,000 gross tons or more. The requirements are essentially the same as the steering gear requirements adopted by the 1978 International Conference on Tanker Safety and Pollution Prevention. The ultimate benefits and impact of the regulations will be a reduction in the probability of collision and grounding of tankers caused by steering failure and a resulting reduction in the risk of property damage, personal injury and death, and pollution of the oceans and U.S. waters. The regulations apply both to U.S. tank vessels and to foreign tank vessels that call at U.S. ports.

**EFFECTIVE DATE:** These regulations become effective on January 1, 1980.

**FOR FURTHER INFORMATION CONTACT:** Gordon Sims, c/o Commandant (G-MMT), U.S. Coast Guard, Washington, D.C. 20593 (202-426-2206).

**SUPPLEMENTARY INFORMATION:** On February 12, 1979, the Coast Guard published a notice of proposed rule making in the Federal Register for these regulations (44 FR 9035-9038). Interested persons were invited to submit comments on the proposals and thirteen comments were received. Comments were also received at public hearings held in Washington, D.C., and San Francisco, California.

The comment period on the proposed regulations closed on April 16, 1979, and publication of final rules was planned on June 1, 1979. However, a determination was made thereafter to delay publication, and notice of the delay was published in the Federal Register of June 7, 1979 (44 FR 32713-32715).

These regulations incorporate the steering gear requirements developed by the 1978 International Conference on Tanker Safety and Pollution Prevention (TSPP). The TSPP Conference was held under the auspices of the Intergovernmental Maritime Consultative Organization (IMCO) and the United States was a participant. These regulations, also adopt the minimum steering gear requirements set out in section 5 of the Port and Tanker Safety Act of 1978 (PTSA). The steering gear requirements in PTSA are essentially the same as corresponding TSPP requirements.

The notice of proposed rule making contains a detailed explanation and discussion of the regulations and their background. Reference to this discussion is helpful in understanding the regulations and their applicability. Because of reprinting costs, however, the material is not reproduced here.

#### Drafting Information

The principal persons involved in drafting these regulations are: Gordon Sims, Office of Merchant Marine Safety, and William R. Register, Office of the Chief Counsel.

#### Regulatory Analysis

A Regulatory Analysis has been prepared for these regulations in accordance with the Regulatory Policies and Procedures of the Department of Transportation (44 FR 11040-11045). The analysis was conducted in conjunction with the other TSPP regulatory projects published in this issue of the Federal Register.

The analysis discusses the economic impact of the regulations as follows:

The cost of the improved steering requirements is a one-time cost that, for the most part, is independent of vessel size. The cost of the second steering gear control system and required alarm on existing vessels is estimated to be approximately \$30,000 per vessel. It is estimated that approximately 40 percent of the foreign vessels entering U.S. ports and 30 percent of U.S. flag vessels will require another steering gear control system. Further, it is estimated that 90 percent of the foreign flag vessels and 70 percent of the U.S. flag vessels will need the additional alarm and/or circuit arrangement modifications \* \* \*.

Most of the economic impact will be on existing tank vessels since, as explained in the analysis, few new tank vessels are expected to be built within the next five years. The number of existing tank vessels that will have to comply with the steering gear regulations is approximately 1,650. The total capital cost for existing vessels is expected to be approximately \$20,000,000.

The ultimate benefit and impact of the regulations will be a reduction in the probability of collision and grounding of tankers caused by steering failure and a resulting reduction in risk of property damage, personal injury and death, and pollution of the oceans and U.S. waters.

#### Discussion of Comments

##### a. General Comments

Four commenters recommended that the regulations be made applicable to all U.S. and foreign vessels that call at U.S. ports, including freighters and passenger vessels as well as tankers. One commenter also recommended that the regulations be made applicable to smaller vessels and that further efforts be undertaken to adopt additional standards for tank vessels including more rigorous standards on steering failure detection and steering recovery. Although these recommendations are important, they are beyond the